The definition and development of Open Innovation models to assist the innovation process

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Thesis presented in partial fulfilment of the requirements for the degree of Masters of Engineering Management at the University of Stellenbosch.

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March 2010

I Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

II Synopsis

Organisations are continuously striving to attain and maintain a competitive advantage over their peers. The innovation process provides an excellent vehicle for driving this sustained quest for competitiveness, whether on product, process or strategic level.

However, in reality the increased availability and adoption of technology force organisations to increase the speed and effectiveness of their innovation processes to match not only those of their competitors, but to deal with the ever-increasing power of the individual – the empowered, consuming, producing “prosumer”.

The innovation process itself should therefore undergo dramatic alterations to cope with – and include – these empowered prosumers. It is for this reason that the evolution of the innovation process has undergone changes, and is now moving towards the notion of Open Innovation.

Although Open Innovation has been adopted by various organisations, it was found that a well-formulated, standardised set of Open Innovation models is lacking from existing literature.

This research bridges the gap between the previous innovation models and the notion of an open approach to internal innovation, to improve the speed and effectiveness of the innovation process.

It does this by investigating two primary research fields: innovation and Open Innovation, and then merging the two fields to provide a standardised framework to incorporate Open Innovation in the standard innovation process.

The fundamentals of innovation are investigated, whereafter the focus moves to understanding a specific, existing innovation process framework, the Fugle Innovation Process Model. The second field (Open Innovation) is introduced, whereafter various literature sources (real-life examples, case studies and interviews) are used to develop (categorise, define and describe) five standard Open Innovation models.

The five developed Open Innovation models are then allocated to the investigated, standard innovation process, according to what is needed in that particular phase of the innovation process and the beneficial offerings of each Open Innovation model. The allocated models therefore provide a potential substitute for the existing internal activity associated with each of the specific phases.

The result is an existing innovation process model, populated with implementable Open Innovation models to increase not only the value of the innovation process model, but also the value to organisations who wish to deploy Open Innovation.

III Opsomming

Maatskappye is voortdurend besig om ’n mededingende voordeel bo hulle mededingers te probeer verkry en te handhaaf. Die innovasieproses bied ’n uitstekende metode om hierdie doel na te streef, hetsy op produk-, proses- of strategiese vlak.

Die realiteit is egter dat die tempo waarmee tegnologie aangeneem en aanvaar word, en sodoende vrylik gebruik word, konstant toeneem. Dit dwing maatskappye om die spoed en effektiwiteit van hulle innovasieproses volhoubaar te verbeter, nie net om by te hou by hulle mededingers nie, maar ook om die maatskappy korrek te posisioneer ten opsigte van die moderne, bemagtigde verbruiker.

Die innovasieproses moet dus self ’n gedaanteverwisseling ondergaan om ruimte te bied vir die insluiting van hierdie bemagtigde verbruikers. Daarom verander die evolusionêre progressie van die innovasieproses voortdurend en is dit besig om in die rigting van “Oop Innovasie” te beweeg.

Alhoewel Oop Innovasie reeds deur verskeie maatskappye toegepas word, is daar gevind dat goed geformuleerde, standaard-, implementeerbare prosesse (of modelle) steeds in die literatuur ontbreek.

Hierdie navorsings oorbrug dus die leemte tussen die meer konvensionele “geslote innovasie” en die nuwerwetse neiging na “Oop Innovasie”, om sodoende die spoed en effektiwiteit van die interne innovasieproses te verbeter.

Dit word bereik deur die twee kernnavorsingsvelde te ondersoek: innovasie en Oop Innovasie, en dan die twee velde te kombineer om ’n gestandaardiseerde model te skep wat Oop Innovasie by die standaard-innovasieproses insluit.

Die metodiek fokus eerstens op die kernaspekte van innovasie om ’n beter begrip van die veld te ontwikkel. Daarna verskuif die klem na die beskrywing van ’n reeds bestaande innovasieproses-model, die Fugle-innovasieprosesmodel. Hierna word Oop Innovasie bekend gestel, waarna vyf implementeerbare Oop Innovasie-modelle ontwikkel word aan die hand van verskeie werklike voorbeelde, gevallestudies en onderhoude, om sodoende die modelle te groepeer, te definieer en te beskryf (voordele, nadele en vereistes).

Die vyf Oop Innovasie-modelle word hierna toegedeel aan die verskillende fases van die innovasieprosesmodel deur ’n vergelyking te tref tussen die behoeftes van elk van die fases en die proposisie wat elk van die Oop Innovasie-modelle bied.

Die resultaat is dus ’n bestaande innovasieprosesmodel waarvan die waarde verhoog is deur die insluiting van implementeerbare Oop Innovasie-modelle. Dit voeg waarde toe vir organisasies wat graag ’n Oop Innovasieproses wil instel.

IV Acknowledgements

Corné Schutte, the study leader, for his ever-enduring assistance and guidance on subjects and issues stretching far wider than the scope an academic research effort can ever wish to fulfil. The truthful, enlightening conversations we had concerning the work and personal sagas, with or without Scotland's best, will forever remain with me.

Thank you for the role you played in shaping my years to come.

***

A single paragraph cannot do justice to the support I received from family members and loved ones, who encouraged me to see the light at the end of the tunnel when the hour was dire. The support, understanding and friendship received during the duration of this research effort have reshaped my viewpoint on various topics, personal and professional, for which I will forever be grateful and filled with respect.

"Gratitude is the moral memory of mankind"

Georg Simmel

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VIII List of Acronyms and Abbreviations

CI	Customer Immersion
CPD	Collaborative Product Design & Development
CPU	Central Processing Unit
HGP	Human Genome Project
IC	Idea Competitions
ICM	Idea Competition Management
ICT	Information and Communications Technology
IN	Innovation Networks
IP	Intellectual Property
IPRs	Intellectual Property Rights
IT	Information Technology
KM	Knowledge Management
LC	Life Cycle
OEM	Original Equipment Manufacturer
OI	Open Innovation
OS	Operating System
PDLC	Product Development Life Cycle
P&G	Procter and Gamble
R&D	Research and Development
ROI	Return on Investment
VC	Venture Capital
VoIP	Voice over Internet Protocol

1 Introduction

This chapter provides the introductory sections of the text. It includes the problem statement, the proposed and expected solution and the methodology that will be used to reach the objective.

The guiding hypothesis will also be found in this chapter, after which the chapter concludes with a description of the logical layout and flow applied to the entirety of the text.

1.1 Introduction

Organisations are continuously striving to obtain, maintain or increase their competitive advantage. This is the primary reason for the existence of innovation, or the management of the innovation process. This process, if applied and managed correctly, thus provides the vehicle for organisations to effectively and constructively convey their objective of differentiation above their competitors – all for the unified goal of being the customer's preferred choice.

The resemblance between this and the game of golf better depicts the scenario. All competing organisations start out on the proverbial tee, with the goal of reaching the green and cup in the least number of shots. Each player will set off in his or her own direction, with their own strategy and selection of tools, in the hope of reaching the cup as the winner.

The innovation management process thus provides the means through which the organisation can more effectively, and in a more structured manner, control how it gains the lead (competitive advantage), whether this will be through a product, process or enterprise-wide innovation, or a combination of the three.

As Michael Porter explains:

> *"Companies achieve competitive advantage through acts of innovation. They approach innovation in its broadest sense, including both new technologies and new ways of doing things." (Porter, 1990)*

The essence of innovation means that nothing within the organisation is left unscrutinised when searching for potential improvement – not even the innovation process itself.

The increasing pressure placed on organisations to compete for market share equates to organisations having to innovate faster and more effectively.

A research effort was undertaken to determine if it would be possible to incorporate Open Innovation into the standard innovation process. If this proves possible, methods (models) that would quantify the inclusion of Open Innovation will be developed.

1.2 Problem statement

Organisations are struggling to increase the success rate of their new product development cycles. It is a sustained struggle to better evaluate ideas and concepts that need to be developed, while the targeting and identification of what exactly customers need and want also needs to be made more accurate. This is portrayed by Pfizer: the pharmaceutical giant's new product development failure rate is 96% (Simmons, 2003).

The problem that thus presents itself is to increase the effectiveness and accuracy of the innovation process. There is a need to better identify customer expectations and needs, while also developing valued, quality offerings at a more correctly targeted market.

This has therefore resulted in the following hypothesis:

> *Open Innovation models can be successfully developed and introduced at specific stages in a standard innovation process, to allow an organisation to make use of those models to improve the success rate of its standard innovation process.*

1.3 Research objectives and methodology

The objective of this text is thus to identify methodologies, tools and techniques through which the effectiveness and accuracy (in terms of success) of the innovation process can be increased. This is done by investigating Open Innovation to determine whether this methodology offers the potential advantages needed to address the innovation process problem, and enhance the standard innovation process.

The area of innovation is first investigated to gain a basic understanding of what it entails. Hereafter, a specific innovation process model is chosen to which the Open Innovation models will be allocated. The Fugle Innovation Process Model is chosen for this purpose (Du Preez & Louw, A framework for managing innovation, 2008).

The Fugle model's intermediate steps will be investigated to a specific level of detail to determine where each identified Open Innovation model will fit in to enhance and improve the conventional innovation process, based on the requirements and objectives of each Fugle stage.

The concept of Open Innovation, first defined by Henry Chesbrough in 2003 (Chesbrough, 2003), is initially discussed as a general concept, whereafter it is proven to be practical by identifying five different implementable models. The placement of these models within different parts of the innovation process is investigated and eventually validated.

The research thus investigates two major areas of research: innovation, and Open Innovation. Each area is individually discussed, followed by the concatenation of the two areas when the five researched and developed Open Innovation models are allocated to specific phases of the Fugle model.

Each of the five models will also be discussed in detail to determine the possible advantages, disadvantages, criteria and potential industries to which it is more applicable. This is achieved by investigating real-life implementations of these models, as well as through interviews with organisations who are already exploiting certain models or are following an Open Innovation mindset in their approach to business.

Refer to Figure 1 for a representation of the methodology that was followed. Note that the bulk of the research effort was put into investigating Open Innovation, and developing and defining the five implementable models. The models were all conceived from existing real-life examples and extended from the detailed literature study undertaken.

The other major facet of the research focuses on the allocation of the developed models. The discussion of innovation in general thus presents an in-depth and well-documented area of research. Figure 1 also depicts the specific chapter numbers (in red circles) that focus on the area of research.

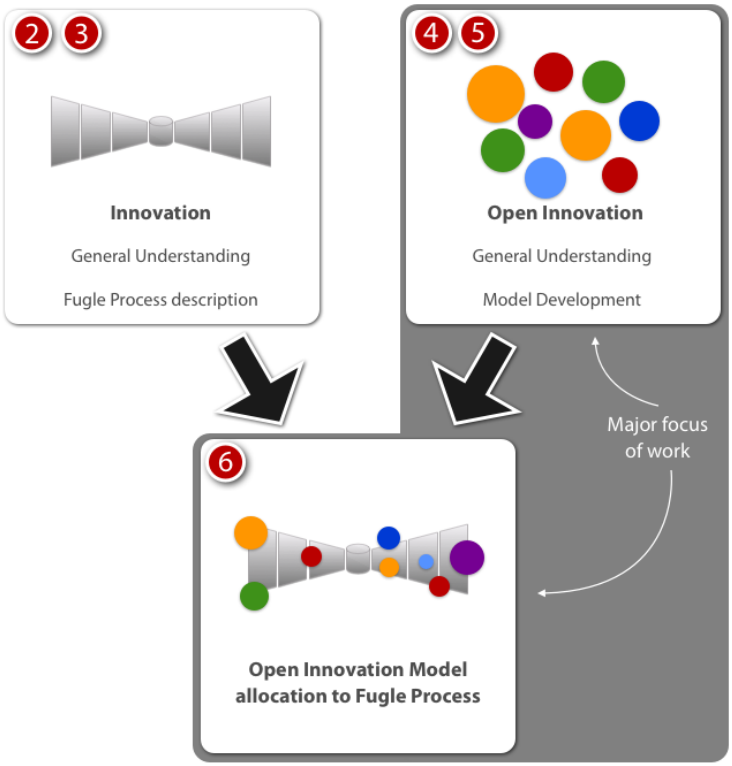


Figure 1 - Research methodology followed

1.4 Research boundaries / Scope

As the innovation process is mostly employed in a formalised fashion in large organisations, and the duration of time involved in the completion of a successful iteration of the process often takes an excessive amount of time, the scope of this study does not allow the actual implementation of these models, or a selection of them, in a real-life context.

Instead, the models will be described conceptually, including the characteristics (advantages, disadvantages and criteria to consider when implementing the models) of each. These conceptually developed models will then be validated via an interview-based assessment where the input from industry experts from diverse backgrounds will be incorporated.

The scope of the research is therefore defined by the limits of conceptual development and assessment.

1.5 Expected outcome

The primary goal of the research effort is to determine whether Open Innovation can be incorporated into the standard innovation process. The objective of this inclusion will be to enhance the standard innovation process to increase the success rate of innovation process cycle iterations.

The secondary goal of the research is to develop (categorise, define and describe) implementable Open Innovation models. These models will then be allocated to the standard innovation process, which will allow the organisation to deploy these models if needed.

The Open Innovation models are in no way intended to replace any or all of the internal innovation process activities. The aim is to provide an organisation with the choice of deploying these models, if deemed appropriate.

It is expected that it will be found that Open Innovation can indeed be incorporated into the standard innovation process and that the development of Open Innovation models, deployable at specific points in the innovation process, is the most appropriate method to incorporate external entities into this process.

It is also expected that Open Innovation will prove to be a means of enhancing the success rate of the innovation process.

1.6 Document layout

The layout and order of the research is presented in such a fashion as to provide the most logical flow. This is achieved by investigating the two major facets of the research (the innovation process and Open Innovation) independently, before the concatenation of the two facets is done.

Each research area is initially researched in a broader, less specific manner (The innovation landscape – Chapter 2, Introducing Open Innovation – Chapter 4), before the detailed areas are tackled (The Fugle Innovation Process Model – Chapter 3, The definition and development of the Open Innovation models – Chapter 5).

The logical flow of the document can be described by the following diagram: [change in diagram:

The chapters are also allocated a different colour scheme to promote the logical flow of the document. Following is a short description of the content of each chapter.

Chapter 1 – Introduction

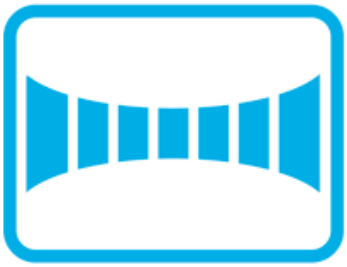
Chapter 1 contains the introductory sections that describe the problem statement, the objectives expected to be achieved by the research, as well as the boundaries and scope of the thesis.

The hypothesis is also defined in Chapter 1. The last section of this chapter describes the logical flow of the document, to provide the reader with guidelines regarding the layout and context of the entire document.

Chapter 2 – The innovation landscape

Chapter 2 lays the foundation by initially focusing on innovation. It provides a definition of innovation, discusses the evolution of innovation, and describes the generic innovation process.

The second half of the chapter focuses on identifying the changes currently being experienced in the innovation landscape. The scope and identification of these changes are guided by the findings of Chesbrough (2003). The goal of the identification of these changes is to serve as primary driver for the introduction of Open Innovation into the innovation process, and to assist in accommodating these changes.



Chapter 3 – The Fugle Innovation Process Model

The concept of innovation that was investigated in the previous chapter is given a more realistic depiction here, as Chapter 3 focuses on a specific, implementable innovation process model, the Fugle Innovation Process Model.

The introductory section of the chapter explains why the Fugle model is a valid representation of an innovation model, while the second half of the chapter investigates each individual phase of the Fugle model to determine its primary requirements and intended goal.

These features will be used to assist in the allocation of the developed Open Innovation models (developed in Chapter 5). The allocation is presented in Chapter 6.

Chapter 4 – Introducing Open Innovation

Chapter 4 introduces Open Innovation. The initial focus of the chapter is to define and explain the concept and methodology of Open Innovation, while also providing possible advantages and disadvantages.

The focus then moves to identifying the sources of Open Innovation, with the goal of assisting the identification of generic implementable Open Innovation models. These sources are then used in collaboration with real-life examples to determine five generic Open Innovation models. These models are defined and elaborated in the following chapter.

Chapter 5 – The definition and development of the Open Innovation models

The five models identified in the previous chapter are further investigated and developed in this chapter.

Each model is defined and its characteristics (advantages, disadvantages and criteria to consider when implementing the models) are identified. This is done through various sources, including existing literature and interviews held with existing organisations that are currently employing certain facets of either a specific model or Open Innovation in general.

The goal is to match specific Fugle phases (determined in Chapter 3) to complete the allocation of the models (in Chapter 6). The chapter concludes with a summarised tabular view of the five models, containing the aforementioned characteristics of each model.

Chapter 6 – The allocation of the Open Innovation models to the Fugle model process

The research culminates in this chapter: the two facets of the research (innovation processes and Open Innovation models) are now combined to deliver a more advantageous end result – an innovation process model equipped with potentially deployable Open Innovation models.

The allocation of the developed Open Innovation models is done by comparing their primary offering with the primary requirements of each Fugle stage.

Chapter 7 – Verification of the Open Innovation model placements

The final chapter of the body of the research focuses on the validation of the research done. This is achieved via interviews with a selection of experts from various relevant industries that each assesses the validity of a specific area of the research.

The verification focuses not only on the allocation of the models, but also on the models themselves, assessing whether the developed models do indeed have the required characteristics.

Chapter 8 – Conclusions and recommendations

The final chapter provides a summary of the research undertaken by once again reiterating the methodology followed, the results obtained from the validation, as well as aspects learnt and derived from the research.

The final section of the chapter highlights certain focus areas that may provide plausible opportunities for future related research.

2 the innovation landscape

This chapter introduces and describes innovation as a concept. It provides definitions for, as well as process descriptions of, the generic innovation process. The second half of the chapter details the changes currently being experienced in the innovation landscape, as described by Chesbrough (2003). This motivates why there is potential for Open Innovation to add value to the innovation process.

The goal of this exercise is to firstly get an understanding of what innovation is, before establishing whether there is a need to add value to the existing innovation process and commencing a study of the Open Innovation methodology.

This chapter thus serves to initially describe the generic innovation process, and then identify the needs within this process that will be addressed if Open Innovation models are introduced into the process.

2.1 Defining innovation

The true meaning of innovation has in recent times been wrongfully exploited for marketing purposes, erroneously describing the scope and complexities of the innovation process. Therefore, an established definition for innovation should be presented that will serve as a point of departure for the entirety of this text.

2.1.1 The definition of innovation

Katz (2007) defines innovation as follows:

> *The successful generation, development and implementation of new and novel ideas, which introduce new products, processes and/or strategies to a company or enhance current products, processes and/or strategies leading to commercial success and possible market leadership and creating value for stakeholders, driving economic growth and improving standards of living.*

Tidd, Bessant and Pavitt (2005) suggest that organisations often confuse invention for innovation, while in their opinion innovation is “a process of turning opportunity into new ideas and putting these into widely used practice”. It is further suggested that the innovation process primarily consists of four core actions:

- search
- select
- implement, and
- learn.

The process, as defined by Tidd et al. (2005) is depicted in Figure 2.

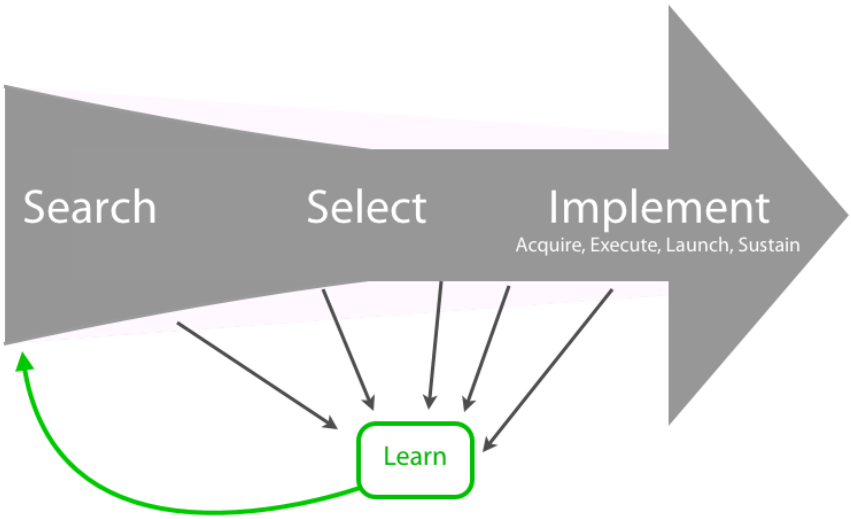


Figure 2 - The basic innovation process

[Tidd et al., 2005]

The actions described by Tidd et al. (2005) concern the identification and creation of new ideas or opportunities for exploitation ("Search"); the filtering of potentially viable opportunities ("Select") and the eventual exploitation of the opportunity ("Implement").

Figure 2 represents only the initial phases of the entire innovation life cycle. It does not describe the operational and disposal aspects of an innovation in fair detail, but these are discussed in the following section.

The innovation process framework that was selected, namely the Fugle Innovation Process Model, includes the abovementioned basic actions and will be discussed in more detail in Chapter 3.

2.1.2 The innovation life cycle

The innovation process can be presented in a life-cycle format similar to that of a product's life cycle. Figure 3 depicts the phases of the innovation life cycle.

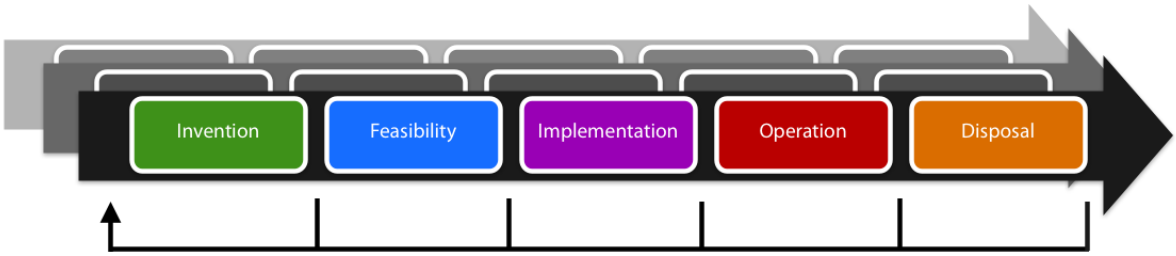


Figure 3 - The innovation life cycle

This representation is an elaboration and a more standardised view of the process depicted in Figure 2. Each phase presents an equally important aspect of an innovation's life cycle. As is argued by Du Preez, Schutte, Essman, Louw and Marais (2009), each phase requires certain inputs, certain activities are performed, and specific outputs are delivered. These activities and deliverables will be discussed in more detail along with the Fugle model in Chapter 3.

The innovation life cycle also lends itself to being an actual life cycle (in contrast with a theoretical life cycle). This means the steps need not be performed in a sequential order. Steps or phases can be revisited according to the specific requirements of the cycle.

Following is a short description of the activities associated with each life-cycle phase:

- **Invention**

  Ideas and opportunities, which the organisation could potentially explore, are identified. Creativity plays an important role during this initial "fuzzy" phase of the life cycle.

- **Feasibility**

  The ideas and opportunities that were identified in the previous phase are assessed to determine the feasibility and likelihood of their success. According to Du Preez et al. (2009)

rigorous testing should also be done in this phase, together with specification development, initial design and functional analysis.

- **Implementation**

  The ideas and opportunities that were deemed feasible and were preliminarily designed in the previous phase are now further designed and implemented in the organisation, or offered to the market.

- **Operation**

  Once the process has delivered a commercially viable output, *operation* is undertaken. This includes activities such as the production and quality control of products, the monitoring and optimisation of processes, and the deployment of strategy.

- **Disposal**

  After a successful exploitation of the innovation, the innovation cycle enters the disposal phase, which concerns end-of-life actions. It ensures the correct disposal of the innovation with regard to environmental and legal obligations. This phase also recognises the importance of learning from the entire process iteration.

The above is a high-level description of the activities associated with each phase. It portrays the importance of having a well-established infrastructure for innovation that would optimise the performance of each phase. The adoption and usage of this life-cycle framework will improve the success rate of innovation process iterations within the organisation.

Although it is important to operate the innovation process in an optimal manner, it is also crucial to differentiate between the different categories of innovation, as each of the categories has unique goals, role-players and requirements. These categories will be discussed in the next section.

2.2 The categorisation of innovation

As is argued by Du Preez et al. (2009), the literature suggests various different types of innovations – the most prevalent being product, process, strategy and marketing innovations. Each of the innovation types (or categories) requires a unique approach, with a different set of role-players participating in the exercise.

The abovementioned innovation types can be categorised into three main types: product, process and strategic innovation. Du Preez et al. (2009) further argue that a successful innovation is often a combination of the three types of innovation (as a new strategy can result in a new product, which requires a new process).

A short description of the primary types of innovation follows.

2.2.1 Product innovation

Product innovation can include a tangible product, or a service delivered by the organisation. This can be better described as an innovation that relates to the organisation's *offering*. The requirement that is prescribed by Du Preez et al. (2009) is that both parties involved (the organisation and the customer) should gain value from the transaction.

A product innovation is the category that presents itself to the external market in the most tangible manner – as opposed to process or strategic innovations, which revolve around the internal activities of the organisation. It is for this reason that product innovations will offer the greatest opportunity to incorporate external role-players into the innovation process. This is depicted in Figure 4.

Open Innovation will therefore be most applicable to product innovations.

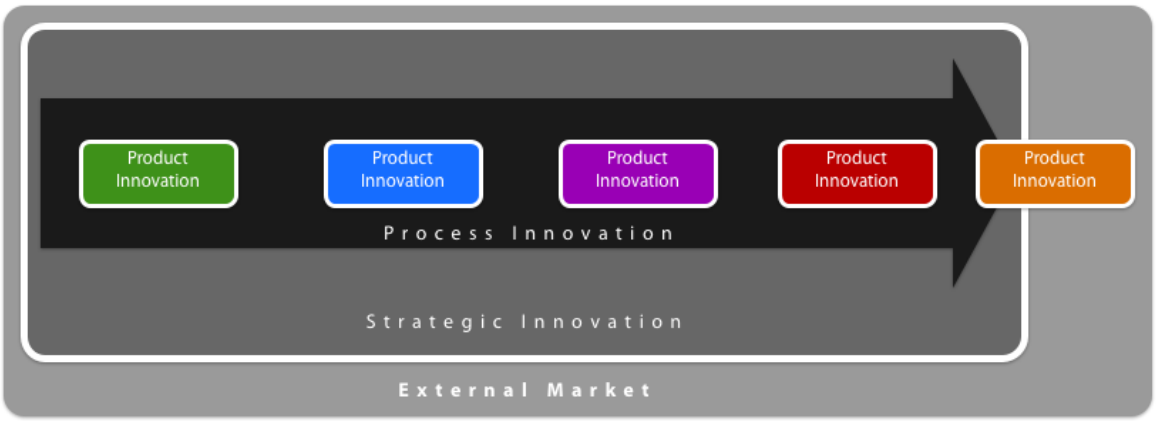


Figure 4 - The categories of innovation

According to Du Preez et al. (2009) and Rothberg (1981), to constitute an innovation, an offering need not be an entirely new product or service. Rothberg (1981) believes product innovation from the perspective of an organisation encompasses a "*change in, or an addition to the entities that comprise*

its product line". Therefore, if external role-players were to be incorporated in the product innovation process, incremental additions made by these role-players would still qualify as an innovation.

2.2.2 Process innovation

Process innovation refers to any procedure or action that is implemented to execute the transformation of resources associated with the organisation. The purpose of process innovation is to improve the effectiveness and efficiency of the activities that are used to deliver the organisation's offering.

As is argued by Du Preez et al. (2009), the process can relate to a high-level managerial process, or to a detailed set of tasks to execute an operational process.

The goal of process innovation is to improve the competitive advantage of the organisation by providing differentiation in product delivery time or the quality of the product.

2.2.3 Strategic innovation

Strategic innovation refers to the actions performed to alter an organisation's direction or positioning with regard to the market and its competitors. Hamel (2006) refers to strategic innovation as "Business Concept Innovation".

A change on the strategic level of an organisation would ultimately affect the other types of innovation category activities in the organisation, as the organisation's strategic direction and positioning will influence its offering. This, in turn, will require alterations to the processes associated with that offering.

The introduction of Open Innovation into an organisation would therefore initially be a strategic action; thereafter it will syphon through to the "lower" and operational level activities of the organisation.

2.3 The role of innovation

Innovation helps an organisation to fulfil one of its most fundamental goals: increasing its competitiveness. It is through acts of innovation that an organisation will achieve this competitive advantage over its competitors, to fulfil another fundamental goal: being successful.

Innovation, and not invention, is thus a primary candidate to drive an organisation to gain dominant market share in an industry, or to deliver a new offering to the market. This scenario is depicted in Figure 5.

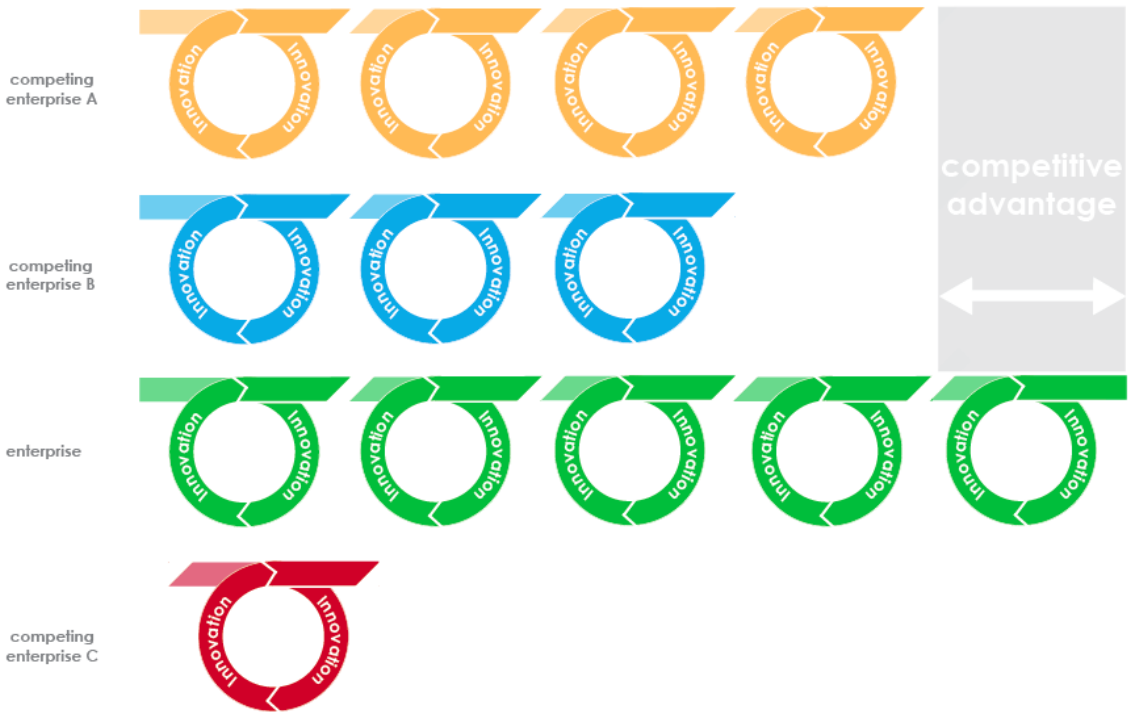


Figure 5 - The role innovation has to fulfil

[Adopted from Rothwell (1992) and Du Preez et al. (2009)]

It is the continual application of the cyclical innovation process that will result in an organisation's long-term sustained competitive advantage and success.

Innovation as a concept should be strategically introduced into an organisation to drive the vision of "being an innovative organisation". At the same time, it should be implemented on an operational level to assist in new product and process development.

2.4 The progression of innovation models

Various literature sources offer different innovation process models, with a clear progression in the development of the models from the 1930s to the current day, as is described by Du Preez and Louw (2008).

Innovation framework models have undergone a metamorphosis from simple, linear models to more complex and extended networking models, as depicted in Figure 6. The increasing importance placed on the networking aspect as the models have evolved is clearly evident.

The evolution covers the progression from the simplistic market-pull / technology-push approaches, to include the more complex requirements of parallel functions across the entire organisation, to the eventual inclusion of a networked approach to innovation.

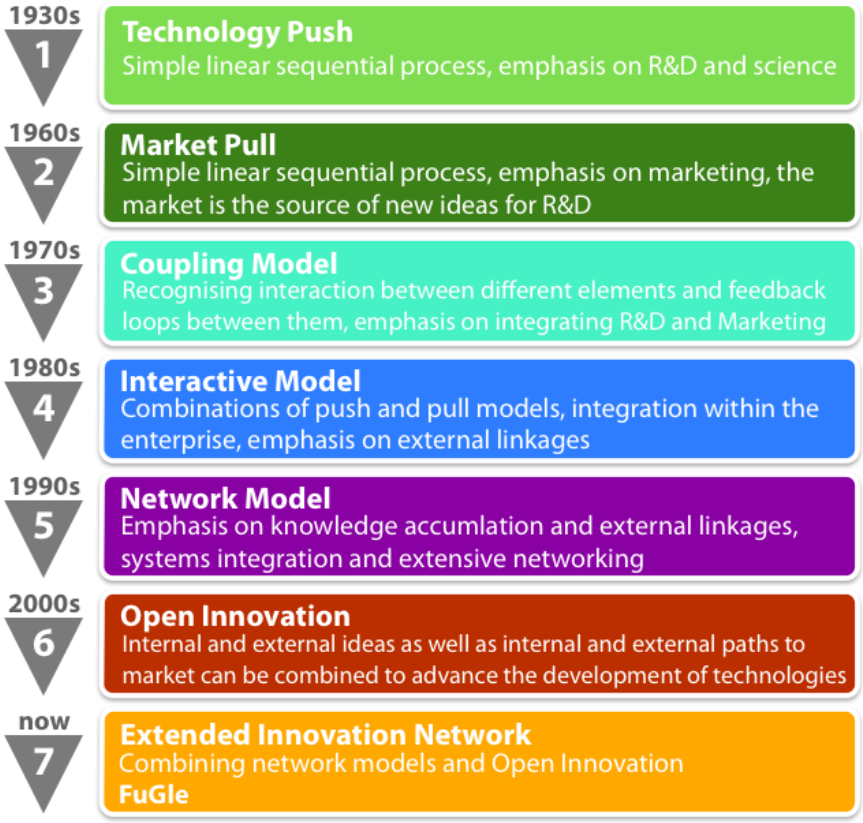


Figure 6 - Progression of innovation models

[Du Preez et al., 2009]

Open Innovation will enforce the emphasis placed on networking and external linkages by solidifying the role external entities and role-players have to fulfil in the standardised, internal innovation process.

The latest addition to this depiction of the progression of innovation models is presented by Du Preez et al. (2009). The seventh generation (Level 7 – Extended Innovation Network) represents the

culmination of the networked models (which are still primarily internally orientated) and the externally orientated Open Innovation generation.

It is for this reason that the Fugle Innovation Process Model (discussed in Chapter 3) was selected as the innovation model into which to introduce the Open Innovation models. The open-adapted Fugle model will thus present the realisation of the latest innovation model – Level 7 – as depicted in Figure 6.

Du Preez et al. (2009) argue that the progression and development of the models grow in relation to the evolvement of the knowledge and understanding of the subject matter. Therefore, it is argued, this evolution is by no means completed. The objective of this text is thus to relate the sixth generation to the seventh generation of innovation models, in the attempt to bridge the gap between the identified generations.

2.5 Identifying the changes in the current landscape

As discussed above, innovation has progressed and evolved tremendously during the last half-century. These changes are influenced and forced by a selection of drivers, including drivers relating to technology, customers, market and competition. These drivers have not only forced the evolution of the innovation process, but also altered organisations' strategic approaches to research and development (R&D).

It is suggested by Chesbrough (2003) that any modern-day organisation's internal R&D has lost its value as a strategic asset. Chesbrough (2003) thus states that the R&D process, which is mostly undertaken inside the organisation, has lost its effectiveness and cannot be used as an asset to compete for competitive advantage.

This is motivated by increasing pressure placed on organisations through the emergence of Web 2.0 technologies being adopted and used by their customers and competing entities.

These changes in the innovation landscape have forced organisations to adapt. Thus, modern organisations have been forced to open up their innovation processes – not only to gain a competitive advantage over their competitors, but in various instances to keep up with the competition.

This evolution in positioning acts as main motivation for the development of Open Innovation, according to Fredberg, Elmquist and Olila (2008). Chesbrough states two reasons for the emergence of Open Innovation:

- The increased mobility of knowledge-workers, and
- The introduction of new financial structures, such as venture capital (Fredberg et al. 2008).

These arguments will be further researched to determine whether they have any merit as justification for researching the opening of the internal innovation process. If so, this would be a plausible methodology to incorporate and adapt to changes in the innovation landscape, and in that way possibly increase the success rate of the innovation process.

The abovementioned arguments all have one driver in common: change in technology. It is the change in technology that allows the mobility of knowledge workers and also allows the individual to source new financial alternatives, such as venture capital. This shows that technology (especially internet-related technology) is at the core of the changes experienced in the innovation landscape.

If the arguments stated by Chesbrough (2003) are deemed to be true, Open Innovation will have a role to play in the organisations of tomorrow. In that case, this research will further investigate Open Innovation with the purpose of developing implementable models to enhance the innovation process models of today.

The following subsections place the spotlight on the changes experienced in the innovation and R&D landscape. These changes will then be used to argue why a change to the existing innovation process is needed.

2.5.1 The changing role of the individual

There has been a dramatic increase in the demand placed on innovation with regard to new products and services. This can be contributed to various factors:

- The increase in the influential power of the individual, enabled by Internet technologies.
- The rise of Web 2.0 technologies, which enable smaller companies to operate more innovatively and create more effective innovation structures, thus increasing the pressure on large organisations to enhance the effectiveness of their innovation processes.

The power of the individual is portrayed by *Time* magazine's selection of the magazine's Person of the Year award for 2006: "You". The award was given based on the increase in contributions made by, and work done, by individuals:

> *Car companies are running open design contests. Reuters is carrying blog postings alongside its regular news feed. Microsoft is working overtime to fend off user-created Linux. We're looking at an explosion of productivity and innovation, and it's just getting started, as millions of minds that would otherwise have drowned in obscurity get backhauled into the global intellectual economy.* (Grossman, 2006)

It is thus clear that it is not only small organisations that are potential threats to the large organisations, but also individuals.

This change in role was foreseen by Alvin Toffler, who first referred to the term "prosumer" in his 1980 book, *The Third Wave* (Toffler, 1980). Toffler was referring to the merging roles producers and consumers would be playing in the future. He thus predicted the revolution of mass customisable products (mass production of mass customisable products).

Organisations are thus forced to incorporate these empowered individuals (or "prosumers") into their innovation processes to minimise the risk they pose to the established business models of large organisations.

This fusion of the role-responsibilities is ever-present in new products, showing the migration from passive consumer to active prosumer and why this fusion should be exploited now.

2.5.2 The dispersion of research and development

According to a study done by INSEAD and Booze, Allen and Hamilton, there has been a significant dispersion of research and development away from organisations' home countries. This study was based on 187 companies from 18 different countries with a combined R&D spending of $75bn (Doz, Wilson, Veldhoen, Goldbrunner, & Altman, 2006).

The results show a steady decline in "home country R&D sites", which has been recognised since the 1970s. This is depicted in Figure 7.

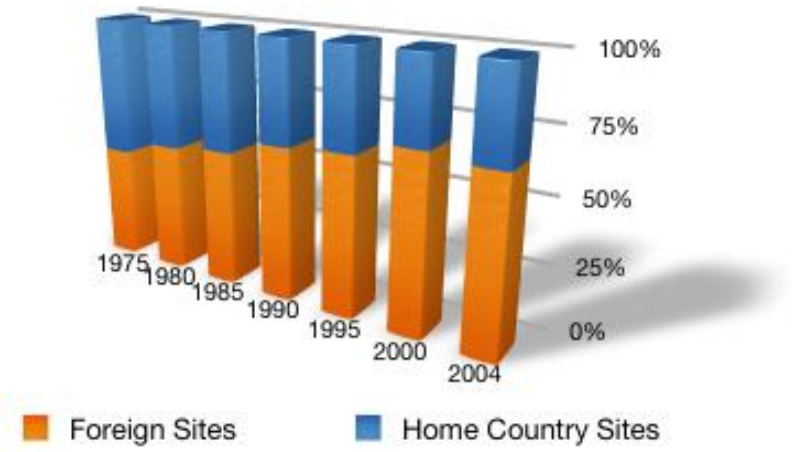


Figure 7 - Growth in foreign R&D

[Doz et al., 2006]

These relocations have been found to be moving towards the East (see Figure 8), especially India and China. These countries have become renowned for their ability to deliver exceptional services at a fraction of the cost, as suggested by Friedman (2005).

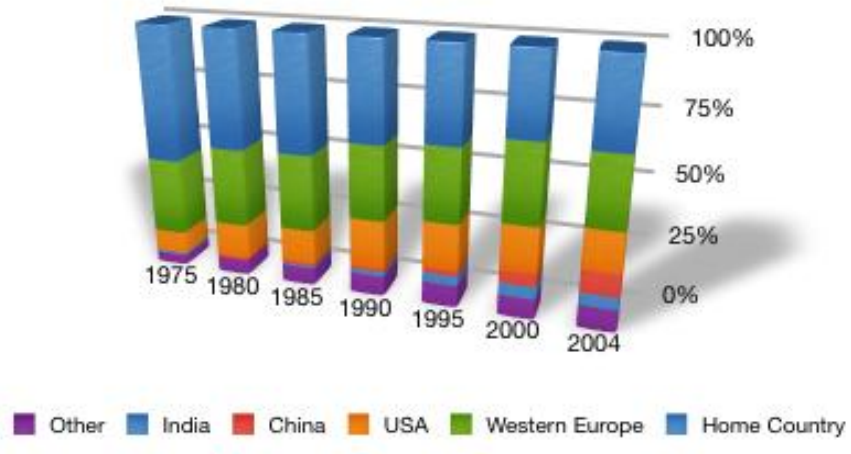


Figure 8 - Changing Distribution of R&D sites

[Doz et al. 2006]

Whereas China and India accounted for 3,4% of foreign R&D in 1990, these countries accounted for 13,9% of all foreign R&D done in 2004. The report also found that, of the interviewees, 75% of all new R&D sites planned for the following three years would be in the East. It was estimated that China and India would account for 31% of all R&D staff by 2007 (Doz et al., 2006).

As was mentioned before, the primary reason for this is that *Chindia* (as it is called by Friedman, 2005) offers low-cost but highly skilled researchers and workers. Organisations thus can't ignore this major opportunity to increase (or at least equal) R&D success rates, with a better return on investment (ROI) at a lower cost.

This illustrates the argument made by Fredberg et al. (2008) concerning the mobility of knowledge workers. Organisations can follow any of a number of routes to maximise the returns from this landscape-change. These mobilised knowledge workers can either be sourced for their knowledge or expertise, or identified and incorporated on a more permanent basis, even though they are located outside the organisation.

Independent of the action organisations choose to take, the organisation will need a sound innovation infrastructure to support this migration. The needed communication channels, knowledge-sharing capabilities and idea-generation methodologies will have to be in place for organisations to fully embrace this opportunity.

2.5.3 The increase in invention

The driving force behind the changes in the innovation landscape is technology, but technology has also had a tremendous impact on a subset of the innovation process – the quantity of inventions produced.

This can be deduced from Figure 9, which shows the number of utility patent registrations applied for annually, together with the actual number of utility patents awarded for the US (US Patent and Trademark Office, 2007). The US Patent and Trademark Office regards a utility patent as an invention.

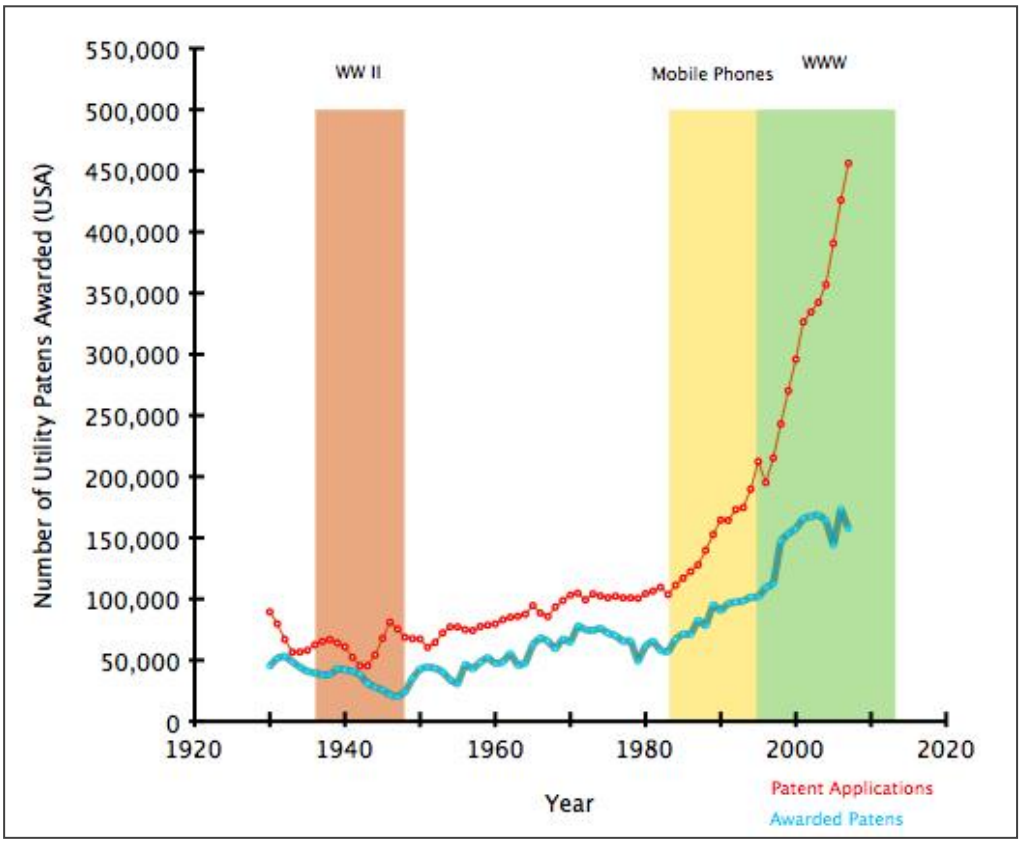


Figure 9 - US utility patents (1930–2007)

[Adopted from USPTO, 2007]

Figure 9 illustrates the tremendous increase in utility patent applications experienced since the start of the World Wide Web (WWW), as it is known today, in 1994. Although there has been a relative decrease in the number of utility patents awarded (only 49,2% of applications have been awarded on average since 1994), the influx is clearly visible.

The increase in patent applications should be viewed in relation to the increase in the availability of venture capital and the amount of capital being awarded. This increase is presented in Figure 10.

Considered in combination, the increase in invention and the amount of venture capital being issued clearly portray the level of desperation that exists on the innovation landscape. Organisations (or individuals) are willing to bet more money on acquiring the “golden deal”.

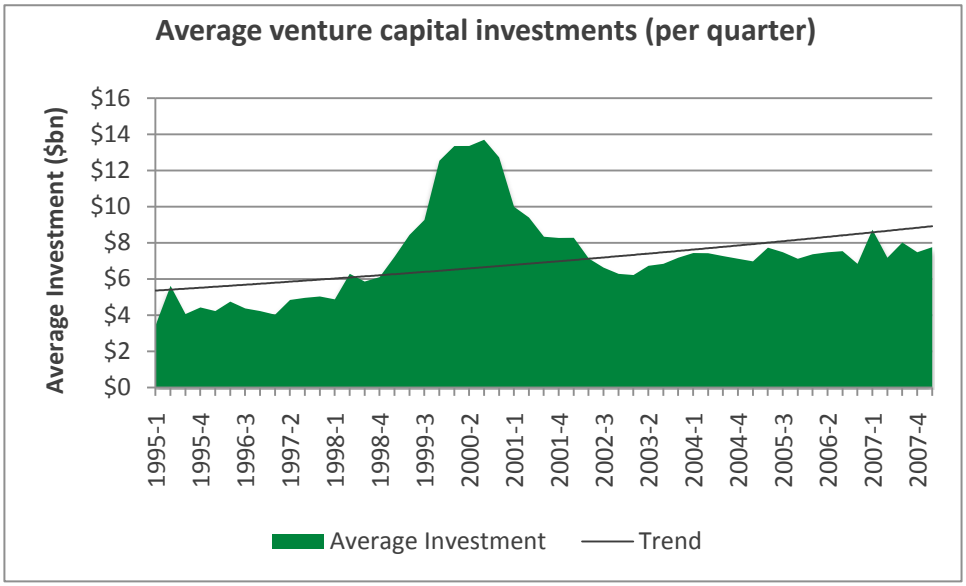


Figure 10 - Venture capital investments

This frantic increase has a cumulative effect – forcing applicants to submit patent applicants for an ever-increasing number of inventions, while venture capitalists are also experiencing changes in their approach. They are forced to award larger quantities of capital, but do so more effectively – especially since the recent global economic meltdown.

Organisations are thus willing to invest capital in other enterprises to acquire new knowledge or skills, or to reduce the possibility of disruptive innovation that might have a detrimental effect on the organisation.

Disruptive innovation was first described by Christensen (1997), and describes the influence new technologies (or inventions) can have on a firm’s existence if this aspect is not addressed correctly.

Research and development (and innovation-process) efforts are thus forced to be more effective – to minimise the risks of wasting resources, while also continually scanning the landscape (outside the organisation) to ensure the minimisation of disruptive technologies.

These efforts will introduce a “safety barrier” around the organisation to ensure that disruptive innovations are detected before they can have a major detrimental impact on the organisation’s business. If the organisation is able to successfully collaborate with external role-players to rather include or accommodate these disruptive innovations, the impact thereof can be lessened.

The reasons mentioned above prove that the arguments presented by Chesbrough (2003) have merit, and that organisations should incorporate Open Innovation into the standard innovation process to sustain competitiveness in the future.

Knowledge and knowledge workers are becoming ever more dispersed and the availability of capital is indeed increasing, driving innovation, and the openness thereof, to new heights. Although the availability of venture capital may have decreased during the latest financial turmoil, the driving force it has created and the creativity it has spurred are still intact. Organisations are also realigning themselves to be ready and act more innovatively when economic stability is re-established.

These arguments prove that the innovation (and R&D) process needs to change. The specific needs that are identified are further discussed in the following section.

2.6 Identification of the needs for change in the innovation process

The examples mentioned in the previous section illustrate why there is a need to increase the effectiveness of the innovation process – effectiveness in the sense of increasing the quantity of *successful* innovation process iterations.

Empowered individuals provide a fresh source of new opportunities and ideas, spurred on by ever-increasing quantities of venture capital. This increase in the innovation funnel's opening will require increased accuracy in filtering and selecting potential innovation projects.

According to these arguments, together with the innovation process actions suggested by Tidd et al. (2005), these improvement efforts should be targeted towards the following:

1. *Improving the effectiveness of searching.* The sources scanned for new ideas should be better defined and identified, to better incorporate and identify the empowered prosumer, as well as minimise the risks of disruptive innovations to the organisation.
2. *Improving the accuracy of selecting.* As the number of potential role-players increases and is investigated, the factors considered in the selection process should be better defined and the accuracy of their actions increased. It is therefore important to improve the selection process used to select the projects worth continuing.
3. *Improving the success rate of implementation.* The acquisition, execution and sustained support of any new invention should be improved. This will only be achieved by providing a more relevant, better positioned, better marketed and better priced product.

The aforementioned requirements are depicted in Figure 11. It should be established whether Open Innovation can assist in meeting these needs: generating more ideas, improving the selection process and developing better positioned products.

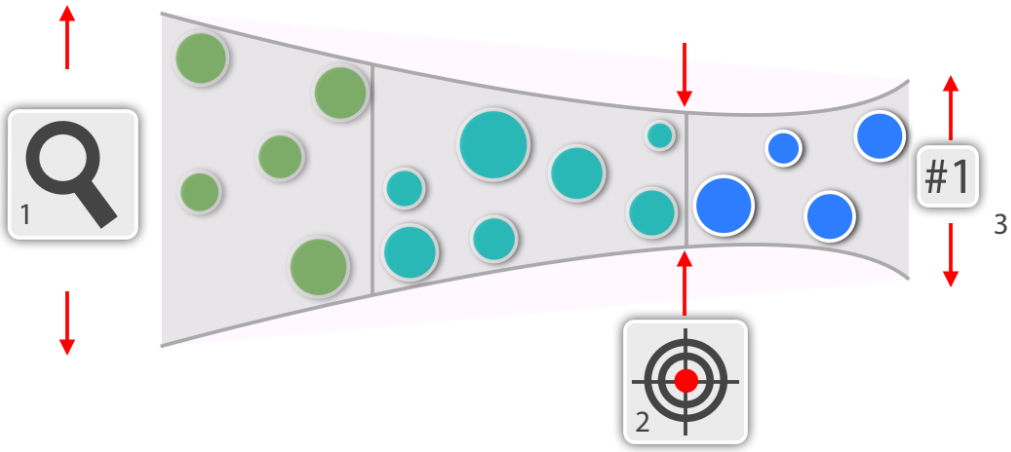


Figure 11 - Improving the innovation process

If the introduction of Open Innovation can address these three key areas, it can be assumed that Open Innovation will be a beneficial addition to the innovation process.

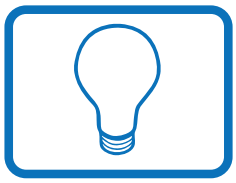
2.7 Chapter summary

The purpose of this chapter was to provide a detailed summary of what innovation entails, and to find proof that would justify an investigation of the possibility of including Open Innovation in the standard innovation process.

It was established that innovation can be approached as a process, which needs to be managed to improve its success. The different kinds of innovation, or the intended goals that innovation can cater for, were also listed and explained (product, process and strategic levels).

Various factors have driven the development of innovation as an implementable life-cycle framework. The latest generation in this evolutionary process points towards the successful inclusion of producers/consumers (“prosumers”) in the internal innovation process. This directly relates to Open Innovation.

The arguments presented for this evolution were examined and it was established that the inclusion of Open Innovation into the standard innovation process can (and should) indeed be investigated.



3 Introducing Open Innovation

Whereas the previous chapter focused on laying the foundations for innovation and introduced the concept of addressing innovation as a process, a specific innovation process model needs be chosen and discussed onto which to place the Open Innovation models that will be developed.

Firstly, the research in this chapter focuses on establishing why the Fugle Innovation Process Model would be a valid representation of an innovation process, then the focus moves to an elaboration of the chosen process itself.

Each of the stages of the chosen innovation process model (the Fugle model) is then described in terms of the specific activities of the various stages and their primary requirements.

3.1 Introducing the Fugle Innovation Process Model framework

The Fugle Innovation Process Model was developed collaboratively by the Enterprise Engineering group of the Global Competitiveness Centre (situated at the Industrial Engineering Department at Stellenbosch University), the innovation consulting organisation Indutech, as well as a number of international research partners from Europe. The Fugle model was initially published by Du Preez and Louw (2008).

The intention of the innovation process, and therefore of the Fugle model, lends itself to being an iterative, repetitive process. This means that the phases, steps or activities need not be executed only once in a sequential order; stages can be revisited in any required order. The Fugle process can therefore be described as a realistic life-cycle process, as opposed to a theoretical process, as described by Du Preez et al. (2009).

3.2 Why the Fugle model?

It should firstly be explained why the Fugle Innovation Process Model framework was selected to be used throughout this text.

Research done by Van Zyl (2006) and Van Zyl, Du Preez & Schutte (2007) resulted in a summarised view of the most prominent innovation process frameworks in the landscape, categorised according to their application types and innovation process phase presence.

This summary was extended by Du Preez et al. (2009) to incorporate a more inclusive view of the list of models initially mentioned in the Fugle Innovation Process Model. The extended summary of the various innovation process models is depicted in Figure 12.

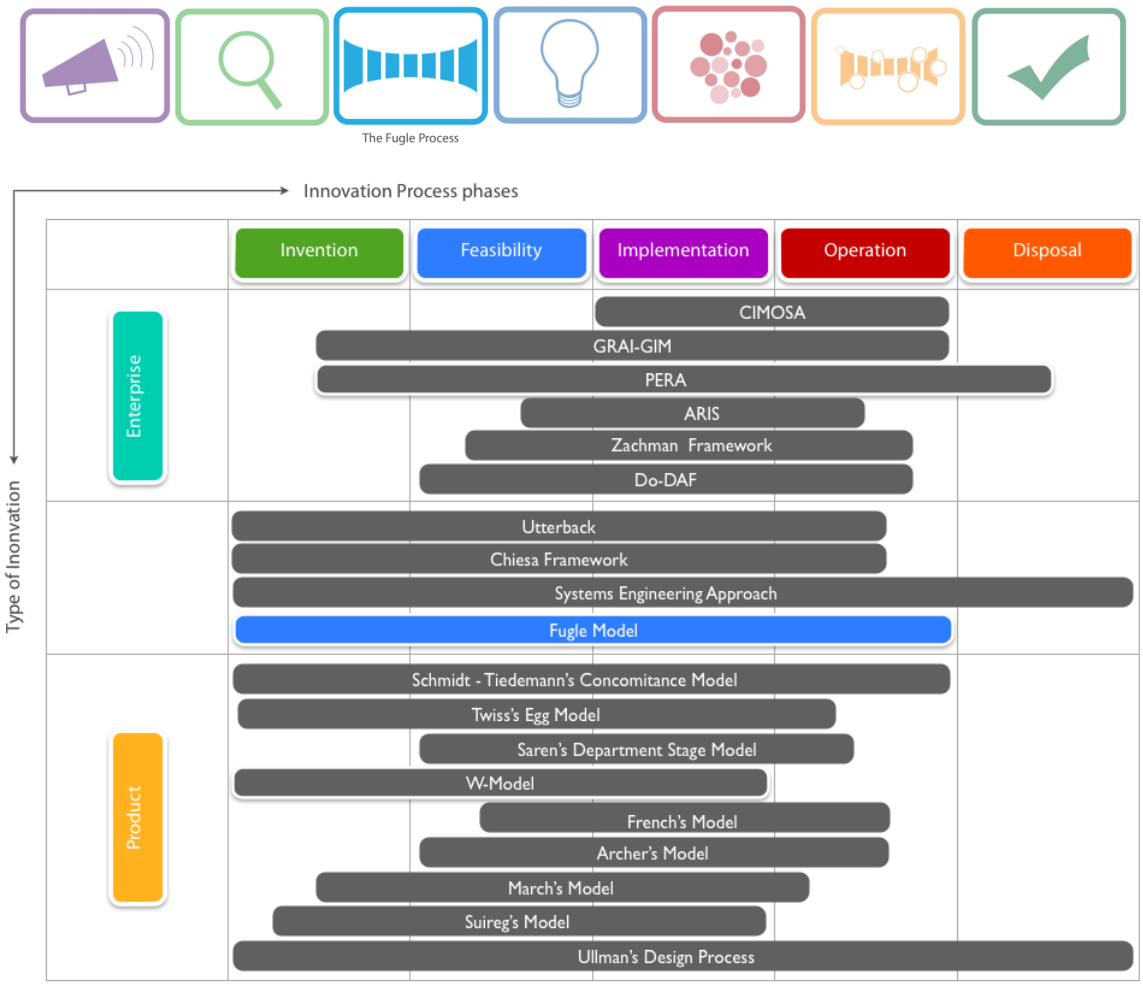


Figure 12 - The various innovation process models and their presence in the Life Cycle phases

*[*Adapted *from Van Zyl (2007) and Du Preez et al. (2009)]*

The group of innovation process framework models situated in the middle row of Figure 12 are applicable (and usable) in a more general fashion, i.e. for product, process and enterprise innovation, as was described in section 2.2.

Since the motivation is to assess the applicability of Open Innovation to as general an innovation process as possible, a framework from the middle row (applicable to product and enterprise) should be chosen. This will ensure that the applicability of Open Innovation is investigated as generically as possible.

The same reasoning is followed with regard to the presence of the listed innovation frameworks in the different phases of the innovation process. A framework with a presence in as many of the phases as possible should be chosen to maximise the investigation of the applicability of Open Innovation.

Therefore, these selection criteria filters out the applicable innovation frameworks to leave either the Fugle model or the Systems Engineering Approach, as these frameworks have the most generic approach as well as the greatest presence throughout the different phases of the innovation process.

The Systems Engineering Approach was not chosen because of its intended goal to assist with the effective realisation of complex and successful systems. In contrast, the Fugle Innovation Process framework was specifically created to guide and manage innovation projects.

The Fugle Innovation Process framework is therefore chosen for its generic applicability to product as well as enterprise innovation, its all-round presence in the different innovation process phases, as well as its primary goal: to guide an innovation project.

3.3 The Fugle Innovation Process Model

The Fugle process describes the activities associated with the “fuzzy front-end”, as well as the development and deployment activities of the second half of the innovation process. The name “Fugle” results from the concatenation of the words “funnel” – describing the first half of the process, and “bugle” – describing the second half. The two high-level phases of the model are divided by the portfolio stage, which serves as a swivel point and midway gate between the two phases.

The Fugle model is depicted in Figure 13.

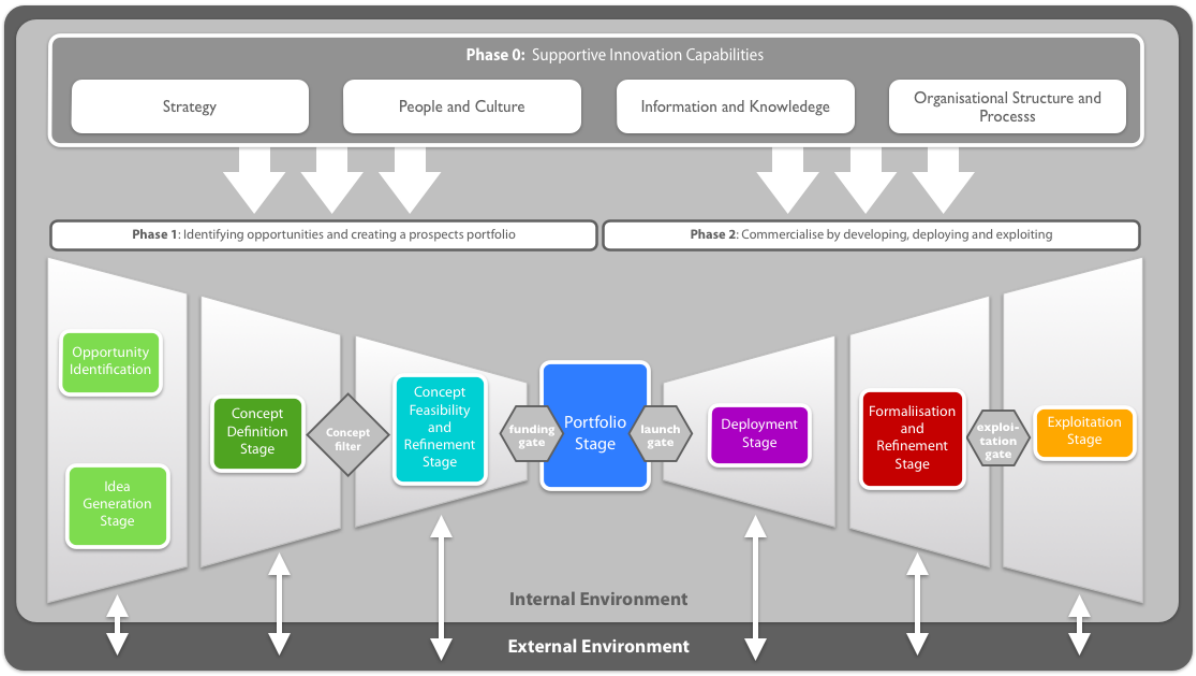


Figure 13 - The Fugle Innovation Process Model

The influences of the supportive capabilities (strategy, people and culture, information and knowledge, and organisational structure and process) are also presented, as is the influence that the external environment should have. Gates and filters are found in between certain stages. These activities act as decision-making points through which the process iteration will have to pass if it were to be a successful one.

As described by Du Preez and Louw (2008), “the aim of the model is to help businesses identify, evaluate, develop, implement and exploit new products and services more efficiently and effectively within their enterprises”. The intended goal of this model relates well to the required improvements identified in section 2.6.

The Fugle model thus assists the organisation in evolving an invention into an innovation. The management of this process portrays the biggest difference between a “Eureka moment”, and successfully converting the idea into a commercial success, which can be done by means of the Fugle model.

The following section describes the different stages of the Fugle model, as well as the associated activities of and requirements for each stage.

3.4 Description of the Fugle model’s stages

Following are descriptions of each stage of the Fugle model, as well as the requirements of each stage. Figure 14 and Figure 16 present an enlarged and more detailed view of the converging fuzzy front-end phase, and of the diverging deployment phase.

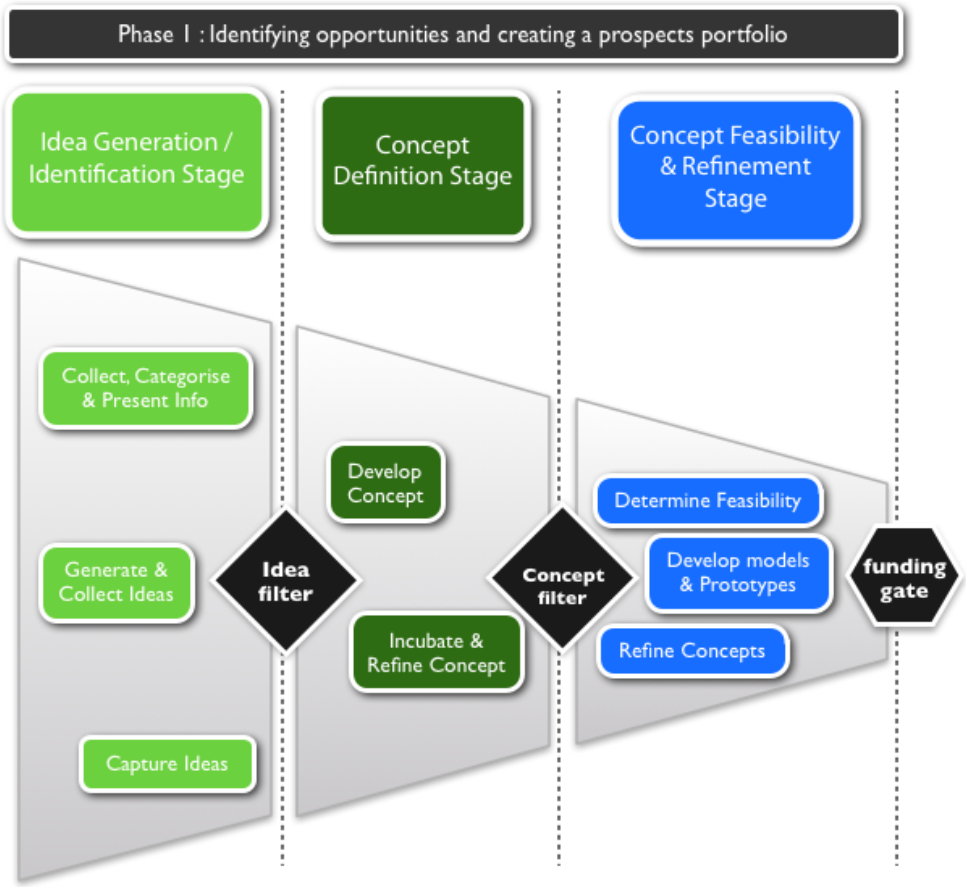


Figure 14 - The first phase of the Fugle process

3.4.1 Idea Generation / Identification Stage

3.4.1.1 Description

The Fugle model as a whole commences with the Idea Generation / Identification Stage. During this phase the seedlings that will form new innovations are created. Creativity thus plays a crucial role during this phase.

The detailed activities of this stage include:

- Collect, categorise and present information
- Generate and collect ideas
- Capture ideas
- Idea filter

The generation of ideas is also used to identify new viable opportunities. It is argued by Gous (2008) that the effective and efficient capturing, classification and presentation of information can act as a stimulus for idea generation.

Du Preez and Louw (2008) argue that presenting the right information to the right people at the right time could trigger new ideas. These ideas may concern the exploration of problem areas or areas of opportunities that the organisation may want to investigate or that are attractive to the organisation.

In the traditional sense, ideas can germinate from focused workshops and brainstorming sessions (Du Preez and Louw, 2008), but information from various sources should be obtained to improve the germination process. These sources of information include information on current problems, new technologies, competitors, customers and organisational strategies.

The stage is concluded with an idea filter that acts as a decision-making point to determine the plausibility of the developed ideas. The ideas are judged in terms of their correlation with the organisational strategy. It is thus obvious that creativity plays an important role in facilitating the idea generation process, although the creativity should be guided, not stifled, by the information provided.

3.4.1.2 Requirements and deliverables

The requirements for the initial phase revolve mainly around *generating large quantities* of *creative* ideas to address newly defined opportunities as well as problems in an innovative fashion. Therefore, the requirements for this phase that may prove to be relevant to Open Innovation include:

- the quantity of ideas, and
- creativity.

3.4.2 Concept Definition Stage

3.4.2.1 Description

It is during the Concept Definition Stage that the ideas identified and evaluated in the previous stage are transformed to form more tangible and plausible concepts (refer to Figure 14). Literature suggests that in various instances different ideas should be combined to form a concept (Du Preez and Louw, 2008 and Gous, 2008).

It is also suggested that the preliminary concept be shared with specific individuals to incubate it. The purpose of this would be to provide time to refine the concept before it is subjected to the concept filter. Also, valuable insights (as to new opportunities or concepts) can be gained from sharing the formed concept with specific role-players.

The concept filter is used to evaluate the proposed concepts against a set of criteria. These criteria include:

- matching the concept against the organisation's strategy
- assessing the commercial attractiveness of the intended offering, and
- sharing the rough concepts with relevant role-players to foster better incubation.

3.4.2.2 Requirements and deliverables

The requirements that could prove relevant to Open Innovation relate to the *sharing of the concept with specific individuals*. It is during this activity that the process lends itself to being more open.

Whereas the assessment of the plausibility of the concepts needs to be an internal exercise, the *incubation* and *refinement* thereof can be positioned to include external input. This input may prove to be valuable, since refining the concept according to the preferences of the external role-players may lead to a product that is more suited to the end customer's requirements.

3.4.3 Concept Feasibility & Refinement Stage

3.4.3.1 Description

As the life-cycle iteration progresses through the stages, the ideas are made ever more tangible. The roughly refined concept identified in the previous stage is now further refined and researched during the current stage to determine its feasibility (see Figure 14).

Various tools can be deployed to assist in this refinement and feasibility-testing process. These include prototyping and modelling – all to assist in the realisation of the feasibility assessment.

It is during this stage that the business case for the concept should be developed. The entire exercise should act as a learning experience, and it is suggested by Wycoff (2007), “to fail fast and smart”. This means it would be of more value to the organisation to cease the development of a flawed business concept during this stage, rather than later when a resource-laden product has already been developed.

Therefore, the assessment concerning the feasibility should be done properly. Information regarding the market, *customer needs and wants*, as well as available technologies should all be used to assess the concept.

It is only through the proper development of a business case for the innovation concept that the probability of success will be realised.

3.4.3.2 Requirements and deliverables

The previous paragraph suggests that the inputs required for this stage include (besides the defined concepts) various sources of *information*, as well as *prototypes* or semi-functioning models to assist in the assessment of the feasibility of the concept.

Therefore, external input concerning customer needs and wants (preferences) can potentially be incorporated to aid the information about the market. However, the final assessment still needs to be an internal affair, as it is in the best interest of the organisation to decide internally whether to proceed with the further development of the concept or not.

The final deliverable of this stage is a concept with the potential for further development, with a well-developed business case that discusses the feasibility and potential rewards of the concept. These outputs are then subject to evaluation in the funding gate.

The funding gate is also referred to as the “Realisation Funding Gate”. It is with this activity that the organisation should decide whether to proceed, halt or remove the developed concept and business case.

3.4.4 Portfolio Stage

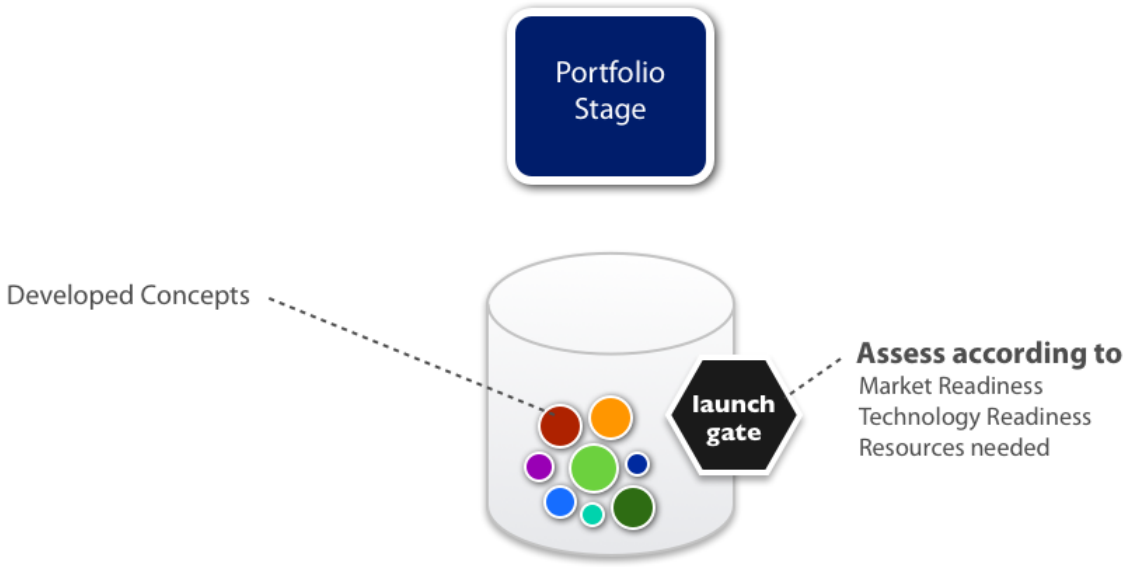


Figure 15 - The Portfolio Stage with accompanying Launch Gate

3.4.4.1 Description

The developed and tested concepts now enter the Portfolio Stage. The outputs from the previous stage (developed concepts with accompanying business cases) are utilised during this phase. They serve as an input to the portfolio stage to be included in the managed innovation projects portfolio of the organisation.

The Portfolio Stage manages the holistic portfolio of developed concepts. It is during this phase that strategic prioritisation, scheduling and release of the concepts into the Deployment Stage are managed. This stage also controls the management of resources and funding to assist in the deployment of identified concepts.

It is therefore clear that the activities in this stage are all of an internal nature, and the possibility of external collaboration on these activities is not recommended. The Portfolio Stage is thus the epicentre of the entire innovation process, and acts as the core internal stage that the organisation should sustain to maintain competitiveness over its competitors and collaborators.

The stage is concluded with the launch gate, as depicted in Figure 15. The launch gate is the realisation of the decisions made during the stage as a whole – at which point the chosen project is launched, based on its (and the market's) readiness.

3.4.5 Deployment Stage

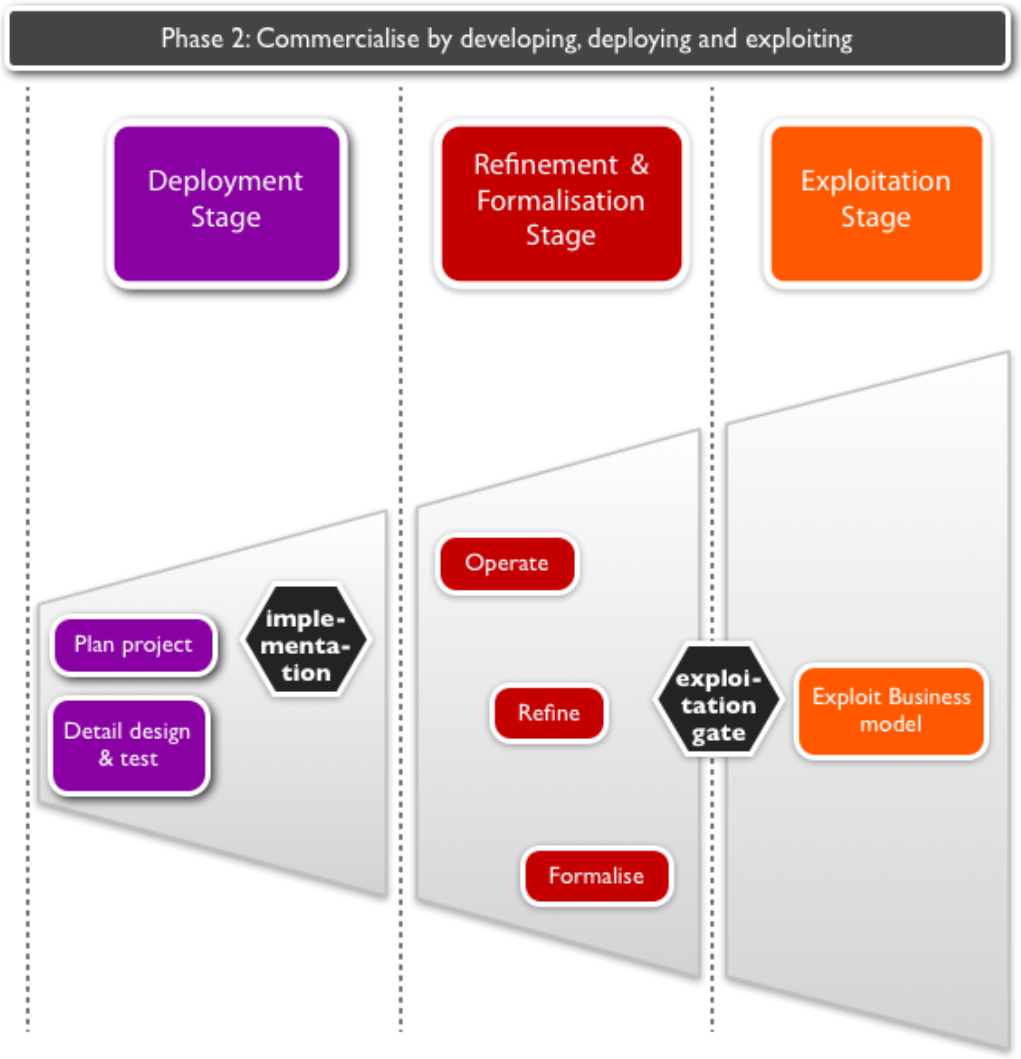


Figure 16 - The second phase of the Fugle model

3.4.5.1 Description

The second phase of the Fugle model commences with the Deployment Stage. Whereas the “funnel” stage was concerned with better defining the proposed ideas, the second half, the “bugle” stage, focuses on the actual development, deployment and extended control of the chosen projects (from the portfolio).

The Deployment Stage contains the activities of detail design and project planning. It is followed by initial refinement, leading to an implementation gate, which assesses the maturity and readiness of the project and the implementation plan. It is only after the project passes through this gate that it will be implemented.

The detail design of the project involves the development of specifications and processes, and the identification of business requirements. These planning activities are then realised through

manufacturing, software development, purchasing, and the installation of physical equipment. The detail design of the project is also associated with detailed testing.

3.4.5.2 Requirements and deliverables

The input into this stage results from the launch gate, consisting of the developed concept and its associated business case. Thorough planning is then required to enable the organisation to deliver the intended product/offering.

Besides planning, which should be done internally – detail design can be orientated in such a way as to create room for a collaborative approach.

3.5 Summary of the relevant Fugle stage requirements

The developed product should be tested and should function according to the specified requirements before it is put through the implementation gate. The testing aspect of this exercise provides an opportunity to incorporate external role-players to validate and test the usability of the developed product.

3.5.1 Refinement & Formalisation Stage

3.5.1.1 Description

The Refinement & Formalisation Stage includes the activities associated with the initial operation of the innovation (refer to Figure 16). It is suggested by Du Preez and Louw (2008) that the newly implemented offering will not function optimally during the initial stages.

This stage is therefore concerned with the operation and refinement of the offering – refinement up to the point where it is functioning to an accepted level of performance. Du Preez and Louw (2008) recommend that once a satisfactory level of performance is achieved, the product can be formalised with operational documentation.

It is suggested that the operation and refinement processes be done in an iterative manner to allow all alterations to be included and tested (Gous, 2008 and Marais & Schutte (2009) before the offering is finalised.

3.5.1.2 Requirements and deliverables

Product usage testing thus plays an important role during this phase. This important aspect should not be addressed as a singular, once-off activity, but rather as a continued effort to ensure the product is functioning correctly and according to the customer's requirements. This aspect of the stage lends itself to incorporating input from external role-players.

The formalisation part of the process should, once again, be internally handed, after the input surrounding product testing has been incorporated and tested.

3.5.2 Exploitation Stage

3.5.2.1 Description

The final stage of the Fugle innovation process as a whole concerns the further exploitation of the developed offering to attract new markets, open new distributions channels or identify new business opportunities.

Before this activity can commence, the formalised product needs to pass through an exploitation gate. It is at this point that the product would have reached its fully ready state for adoption by the mass market. Marais and Schutte (2009) recommend that further value should only be exploited from the product once it has passed through this gate.

The exploitation gate is used to identify which innovations to exploit further, as not all innovations are suited for further exploitation. The business case developed in accordance with the concept should be used when deciding on, and developing further exploitation methods for the innovation.

3.5.2.2 Requirements and deliverables

One of the requirements of this stage is to assess which developed innovations are suited for further exploitation. In essence, this requires a new innovation process iteration loop. The development of these new innovations requires either prolonged employee involvement, or could be opened up to allow external role-players to contribute towards the further exploitation of the initial innovation.

3.6 A summary of the requirements of the Fugle stages

Table 1 summarises the requirements that may prove to be relevant to Open Innovation (OI). These requirements will be used when the developed Open Innovation models are allocated to the Fugle process, based on the primary offering each Open Innovation model can provide to the requirements.

Table 1 - The focuses and relevant requirements of the Fugle stages

Stage	Primary focus	OI-relevant requirements
Idea Generation / Identification Stage	Identification of ideas and opportunities	• Number of ideas, creativity
Concept Definition Stage	Combining ideas and developing concepts	• Sharing concepts with relevant role-players
Concept Feasibility & Refinement Stage	Determine feasibility, prototyping, refining concepts	• Iterative testing • Tangible prototypes to tests
Deployment Stage and Refinement & Formalisation Stage	Project planning, detail design and testing, implementation, initial refinement	• Developed product, testing, refining • Role-players to assist in refinement
Exploitation Stage	Identifying new markets, exploiting new markets, increasing revenues from product	• Developed product to exploit new market channels

3.7 Chapter summary

The focus of this chapter was the Fugle Innovation Process Model, and the reasons why this specific model was chosen for use in applying Open Innovation models to an existing innovation process model.

Arguments were presented stating that, although the Fugle model is not the only representation of the innovation process, it provides a generic and broad coverage of the most phases associated with the innovation life cycle. Therefore, if the applicability of Open Innovation models to the Fugle can be proved, it can be assumed that the models will also be applicable to the other process models presented in Figure 12.

This chapter also discussed each phase of the Fugle model in fair detail, along with the primary requirements (relevant to Open Innovation) of each stage. The developed Open Innovation models will be allocated according to these requirements.

In terms of the methodology of the research, this level of detailed understanding is required to facilitate the placement of the Open Innovation models (which is done in Chapter 6).

4 introducing open innovation

The focus of the research now moves on to cover the second facet of the research – Open Innovation. Whereas the previous two chapters focused solely on creating the context for innovation, the innovation process and the need to improve that process, the following two chapters will focus on creating the context for Open Innovation, and identifying and developing five implementable Open Innovation models.

Firstly, the concept of Open Innovation is defined, followed by a description of real-life examples of organisations that are deploying and using Open Innovation to help them gain an understanding of the practical procedures of the concept.

The different sources for Open Innovation that will assist in the development of the implementable models (this will be done in Chapter 5) are also identified.

4.1 Defining Open Innovation

Open Innovation as an implementable concept was introduced during the emergence of Web 2.0 technologies, and was used by various companies to a varying degree before it was academically documented.

Such is the case for Procter & Gamble, the consumer goods giant, who under the direction of A G Lafley envisioned in 2001 already that half of their new ideas would come from outside the organisation (Lafley & Charan, 2008), even though the term “Open Innovation” was only defined in 2003 by Chesbrough:

> *Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths to market during the Closed Innovation era. (Chesbrough, 2003)*

According to Fredberg et al. (2008), Chesbrough also later defined Open Innovation as:

> *“[Open innovation is] ... the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology.”*

These definitions of Open Innovation thus clearly stand in contrast to Closed Innovation, where an organisation relies only on internal research and development (R&D), idea generation and problem solving. Open Innovation is the methodology and mindset where an organisation has well-defined structures, and makes use of individuals and/or organisations outside the organisation’s hierarchical structure to have an input as to the R&D, idea generation and problem solving of that organisation.

Figure 17 provides a generic depiction of a traditional innovation process iteration, where an idea (formulated within the organisation) is processed through the entire internal process to eventually become commercially available in the market.

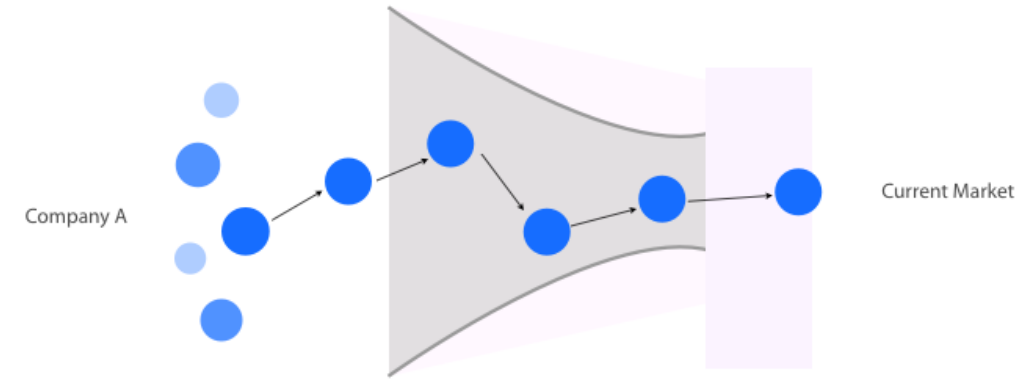


Figure 17 - The traditional innovation process

In contrast, Figure 18 gives an adaptation of the graphical representation of the Open Innovation process as first described by Chesbrough (2003). This diagram shows how different cycles of the innovation process, from different organisations, can have different end results.

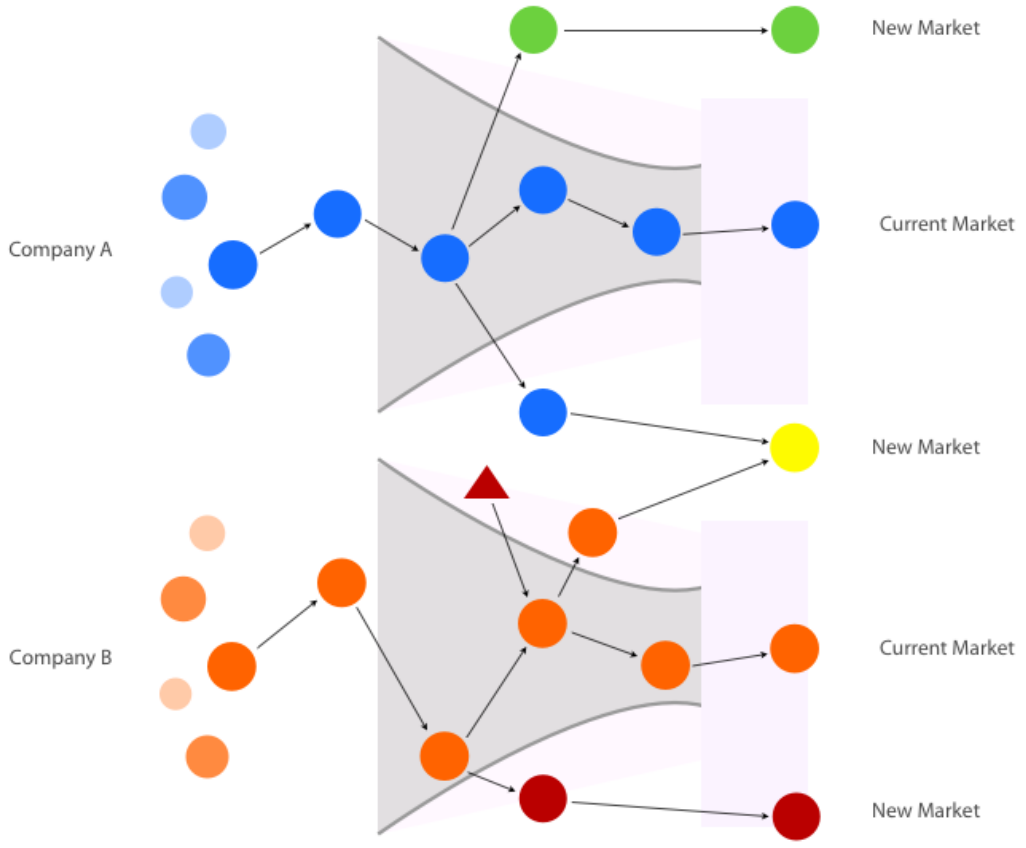


Figure 18 - The Open Innovation process

These end results of the adapted innovation process iteration can result in any of a number of concepts or products, as described by Docherty (2007):

- In-sourced ideas and technologies
- Intellectual property in-sourcing for development
- Intellectual property licensing
- Products in-sourced for scale-up
- Technology spin-outs

Open Innovation relies on an organisation to have the necessary infrastructure (in terms of information and physical infrastructure) to be able to promote the collaboration of the aforementioned actions. It is not just an extension, or outreach to outsource certain internal tasks, or to make use of customer reviews, but rather a methodology that is deeply integrated in the daily innovation cycle procedures followed in a company.

Open Innovation proposes to be a valuable additional methodology that could enhance the standardised innovation process in the same manner as knowledge management does. Knowledge management is supposed to be an underlying function of the entire innovation process. This also applies to the methodology of Open Innovation. The application of the specific models at specific points in the process will be a realisation of this methodology.

Figure 19 provides an illustration of the relationship of the methodologies in terms of the innovation process.

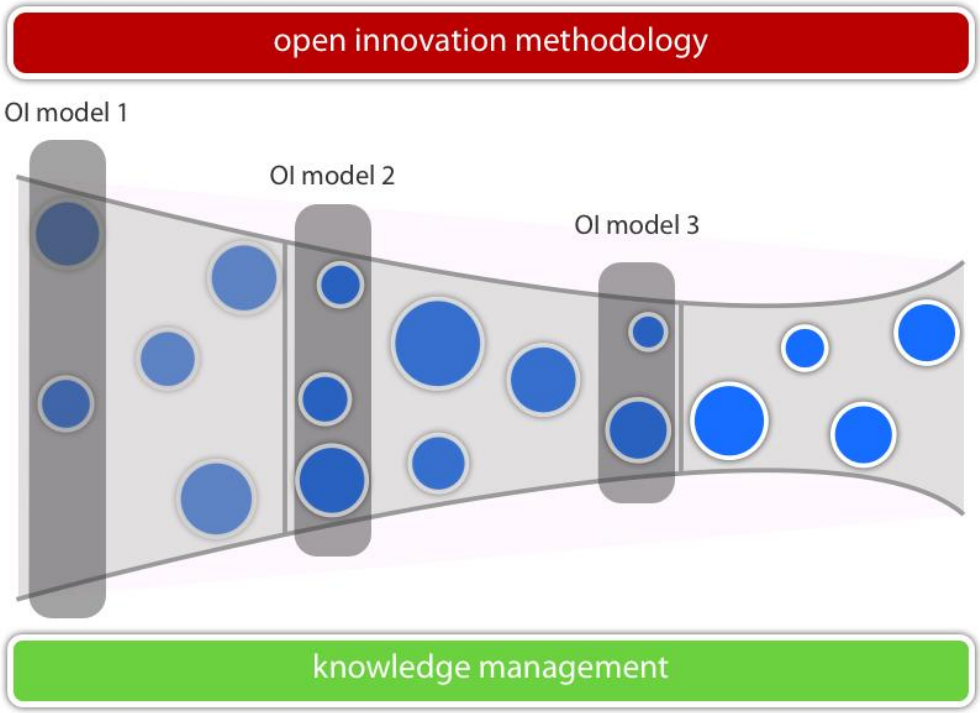


Figure 19 - The innovation process with supporting methodologies

The goal is thus to develop Open Innovation models that will be allocated to specific stages of the innovation process to improve the effectiveness and accuracy of those stages.

It should be clearly understood that incorporating Open Innovation as part of an organisation's innovation strategy does not entail ending all internal innovation-related activities. The goal of this exercise is to create a realistic, implementable alternative that organisations may elect to use or not – depending on the specific scenario.

4.2 The differences between Open and Closed Innovation

A further explanatory depiction of the differences between Open and Closed Innovation is given in Table 2 (Radjou, Cameron, Kinikin, & Herbert, 2004):

Table 2 - Closed versus Open Innovation

	Closed Innovation	Open Innovation
Corporate ethos	Negative stigma surrounding "*Not Invented Here*" / *"We can do it" / "We will do it"*	Best from anywhere
Role of customer	Passive recipient	Active co-innovators
Core competency	Vertically integrated product & service design	Core competitive differentiation and collaborative partner management
Innovation success metrics	Increased margins / revenues, reduced time to market, market share	R&D ROI, breakthrough product or business model
Attitude towards Intellectual Property	Own and protect	Buy, sell – the corporation is the knowledge broker using both licensing and commercial development to monetise Intellectual Property rights
Role of R&D and operations	Design, develop and market in-house inventions	Optimise performance of owned assets through both in-house and external development, do enough R&D internally to recognise significant external R&D

This shows the dynamic and free-flowing nature of Open Innovation and the direct opposition it poses to the conventional "not-invented-here" syndrome.

It is now understood that customers (and suppliers) will definitely play a larger role in the Open Innovation process, and that the innovation process should accommodate that role.

It is also important to grasp the concept that knowledge should be seen and handled as a commodity, as this shows how organisations should regard the incorporation of external knowledge and also the externalisation of internally produced knowledge, to advance external collaboration.

4.3 The potential challenges of Open Innovation

It is of the utmost importance to have an understanding of the difficulties and potential challenges of Open Innovation before this methodology can be deployed. This also contributes to a better understanding of the concept.

West and Gallagher (2006) identified three major challenges regarding Open Innovation:

- finding creative ways to exploit internal innovation
- incorporating external innovation into internal development, and
- motivating outsiders to supply a steady stream of external innovations.

Figure 20 graphically represents the aforementioned challenges. Each challenge is discussed in detail in the following sections.

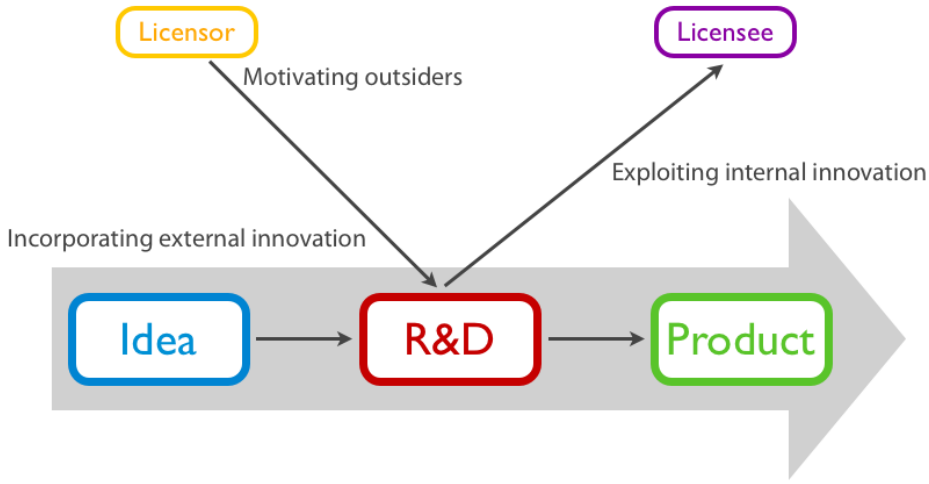


Figure 20 - The challenges of Open Innovation in the R&D process

[West & Gallagher, 2006]

4.3.1 Exploiting internal innovation

Internal innovation can be applied in various forms to maximise its advantages. The most important application, according to West and Gallagher (2006), is to generate innovations that are internally commercialised in the organisation. This is the proprietary approach to R&D, where an idea is internally formed and converted into a product or service that can be exchanged to increase the value of the organisation.

Given the high failure rate associated with companies who still rely solely on the traditional R&D model as the only source of innovations fit for commercial sale, other creative uses for internal R&D will have to be used. As proof of the lack of success of the traditional R&D process, the pharmaceutical company, Pfizer, set itself an aim of reducing its failure rate from 96% to 92% on new drug development (Simmons, 2003).

According to Garnier (2008), the R&D spending by big US pharmaceutical companies has risen from $2bn in 1980 to over $43bn in 2006, but with the same percentage of new drugs being approved now by the FDA (Federal Drug Association) as was the case in 1980.

Generating innovations to be externally commercialised (outside the traditional innovation process) through the use of licensing patent portfolios, provides a revenue-generating form of income for innovations that would otherwise be stagnant with no profitable future.

The introduction of Intellectual Property (IP) and patent trading spaces, like jet2.com (www.jet2.com) and Innocentive (www.innocentive.com, discussed in section 4.4.4) has improved the efficiency and ease with which this can be done. Also, the creation of industry-specific patent pools provides a creative way to maximise the income, thus increasing the success rate of the R&D process.

Bekkers, Duysters and Verspagen (2002) provide the example of the patent pool created by European mobile phone manufacturers to establish the GSM standard during the previous decade. The co-operation of the independent manufacturers resulted in Europe having an advantage over their Asian competitors – if it were not for the sharing of internally created R&D and knowledge within the network, the situation would not have been so advantageous to the European producers.

These examples illustrate once again the existing challenge to improving the success rate of the implementation phase of the innovation process (as described in section 2.3), while the example of the European mobile phone manufacturer network provides a possible solution to this challenge.

It is thus evident that the externalisation of internal innovations could pose a problem, but there are creative means to overcome this challenge.

4.3.2 Incorporating external innovation

The second proposed challenge concerns the difficulty of incorporating external innovation. The greatest challenge is for organisations to be able to identify, understand and selectively choose which external innovations to incorporate in their business.

If an organisation is to succeed at this, it will thus need the infrastructure as well as the absorption capacity to be able to filter through the available, appropriate external innovations.

A solution will have to be found to ensure that customers are included in the selection (filtering) process. The inclusion of the end-customer in the selection process will result in more accurate offerings, as the persons who will eventually use the product will purchase it, since they chose to have it in the first place. This is portrayed by the example of Threadless in section 4.4.2.

The use of external, or Open Innovations, does not equate to the removal of all internal research and development. In fact, for an organisation to be able to make use of external innovations, a sound *internal* innovation process and R&D methodology need to be in place – this is required to ensure the

absorption and filtering capability needed when incorporating external innovations into the organisation.

The level of incorporation of external innovation should be decided before an Open Innovation exercise is commenced. This should ease the selection (filtering) process, as it will be known beforehand to what extend external innovation should and can be incorporated. Pisano and Verganti (2008) suggest that an organisation can have a mixed portfolio of open and closed innovation models. According to them, the deciding factor is whether it fits in with the organisation's strategy. This will be discussed in more detail in section 5.1.

4.3.3 Motivating outsiders to contribute

West and Gallagher (2006) argue that the motivation to contribute to Open Innovation (or spillovers, as they call it) can be viewed on two levels – individual, and organisational.

On the individual level, receiving spillover contributions without rewarding the contributor financially can prove to be a challenge, as other forms of reward often need to be found. Inexplicably, even without financial reward, given the correct circumstances (discussed later), organisations are experiencing that individuals provide spillover innovations or inputs.

Von Hippel (1988) states that customers will often share their innovations with producers if this will result in improved products in the future, as is illustrated by the example in section 4.4.2.

Referring to open-source programming, a clear example of individual spillover contributions towards a single entity, three factors have been identified to be responsible for contributions made by individuals (West & Gallagher, 2006). These drivers state why individuals will contribute towards a collaborative project or product:

- *Direct utility* – either to the individual or to the organisation
- *Intrinsic benefits* – learning a skill, or personal fulfilment
- *Signalling (recognition)* – gaining the respect of one's peers or employer.

The research found that in the example of open-source programming, and more specifically user-modified gaming, individuals will contribute given the following criteria:

- *Minimised technical obstacles* – individuals will contribute when they can perform their alterations on a well-established proprietary innovation provided by the organisation.
- *Creating an infrastructure* – a well-established infrastructure will promote individual activity and additions. (This process, called platforming, will be discussed in section 5.2.)
- *Recognition for contributors* – contributors want to be recognised. These recognitions relate to the abovementioned drivers, independent of the financial value thereof.

On an organisational level, spillover contributions are more organised, often governed by regulations and contractual agreements. The challenge here lies with an organisation being able to identify potential profitable spillover agreements, and sharing Intellectual Property in such a way as to not put the organisation at any disadvantage or risk.

It is suggested by West and Gallagher (2006) that organisations will often share an innovation or other Intellectual Property to gain recognition and increase demand for another product in their product line.

These variations in incentives (remuneration) will later be incorporated in each Open Innovation model. The differences in approach between individual and organisational level spillovers will also be influential when referring to the different Open Innovation models.

The various recommendations made by West and Gallagher (2006) depict the dynamic nature of the application of Open Innovation in an organisation. It illustrates the fact that each installation of an Open Innovation model will prove to be different, as the factors that influence the installation of the model will differ for each installation in terms of level of openness and type of recognition offered.

Although these challenges provide only an introduction to the difficulties associated with Open Innovation, it is clear that plausible solutions to the challenges can be found. It also shows the tremendous planning needed before an Open Innovation exercise can be commenced.

4.4 The different sources of open innovation

4.4.1 Identifying the sources

It is now understood that Open Innovation concerns the incorporation of external knowledge, ideas and Intellectual Property into the traditional innovation process. The next logical step concerns the identification of the different sources that could give rise to these external inputs.

In the traditional sense, all research and development for an organisation is done internally, with isolated cases of customer interaction to determine what the organisation should offer. The explanation of this process, from a supply chain perspective, is given in Figure 21.

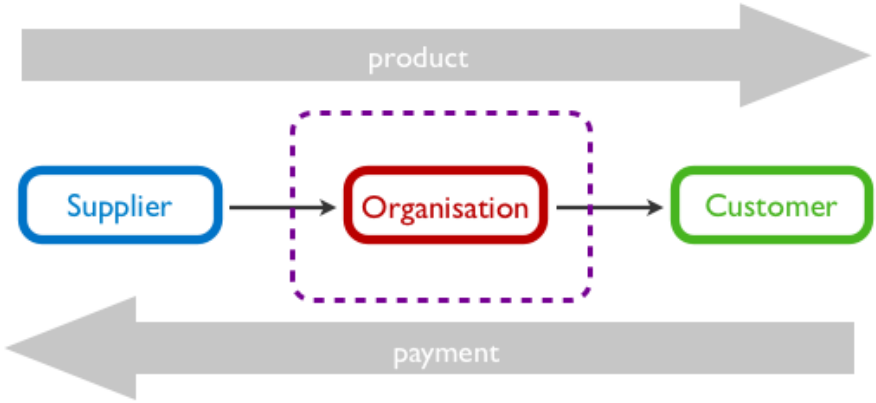


Figure 21 - Traditional supply chain

Successfully fulfilling customer requirements often has to do with the R&D department guessing what is to be achieved, combined with minimalistic probing as to what will be of value to the customer. A *Harvard Business Review* article states:

> *"… Very few companies use the perspective of 'getting the job done' to discover opportunities for innovation. In fact, the innovation journey for many companies is little more than hopeful wandering through customer interviews. Such unsystematic inquiry may occasionally turn up interesting titbits of information, but it rarely uncovers the best ideas or an exhaustive set of opportunities for growth." (Bettencourt & Ulwick, 2008)*

In the case of large-scale, mature companies, relying only on internal R&D and process efficiency improvements to achieve truly innovative ideas and products will not achieve the organic growth needed to keep up to market standards. In the case of Procter & Gamble, achieving a yearly organic growth rate of 4 to 6% equates to new business to the value of $4 billion in a single year (Huston & Sakkab, 2006). It is thus crucial that these large-scale organisations should get an increased external perspective and input to increase their organic growth rate if they want to maintain their competitive advantage.

The rationale for approaching the identification process from a supply-chain perspective results in the identification of three sources for collaboration that are closely linked to any organisation's business processes (see Figure 22):

- Customer-generated innovation
- Supplier input and outsourcing, and
- Network collaboration.

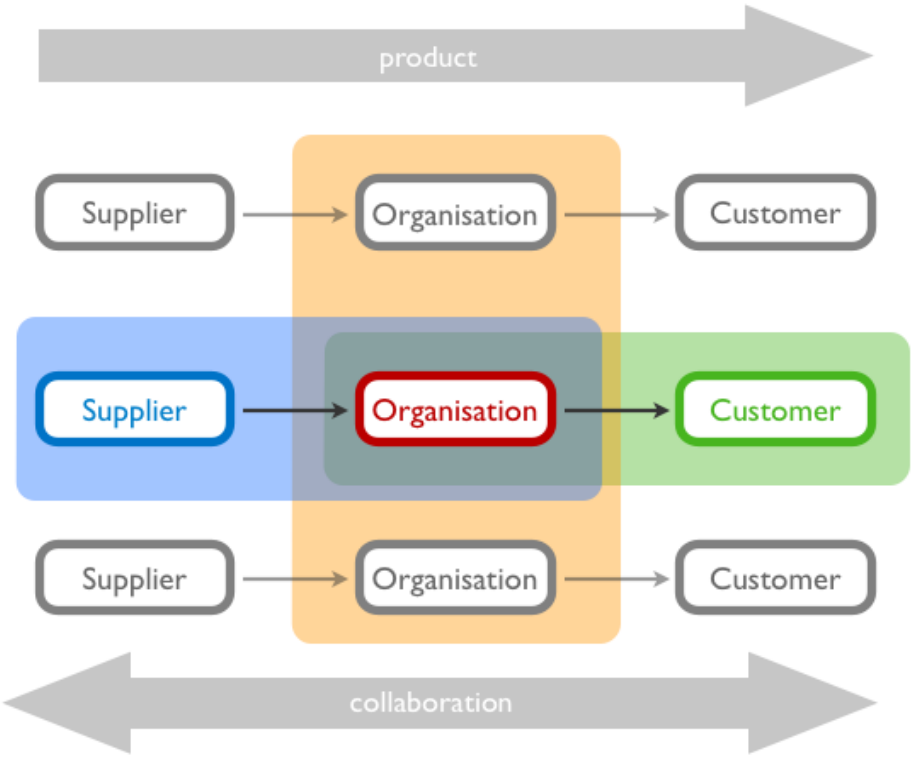


Figure 22 - The sources of Open Innovation

Each role-player has a unique perspective on their relationship with the organisation, and each role-player has a unique offering to give. Each area of potential Open Innovation generation will be discussed in detail below.

4.4.2 Customer-generated innovation

The main objective of any company is to offer something of perceived value to the customer, i.e. to provide a product or service that the customer not only *needs* to use or consume, but also *wants* to use or consume. Customers and users therefore offer the primary source of information as to what they want from a product and, in many cases, of innovation (see below). It is therefore important that the designer and producers need to start listening, and listening well.

As proof of the invaluable role that correct customer input can play, Von Hippel (1988) performed an analysis of the source from which innovations in a specific field (scientific instruments) arise. The research shows that in total, 77% of innovations were introduced or recommended by the users, which includes a 100% user-generated first-of-type innovation (novel innovations) (see Figure 23).

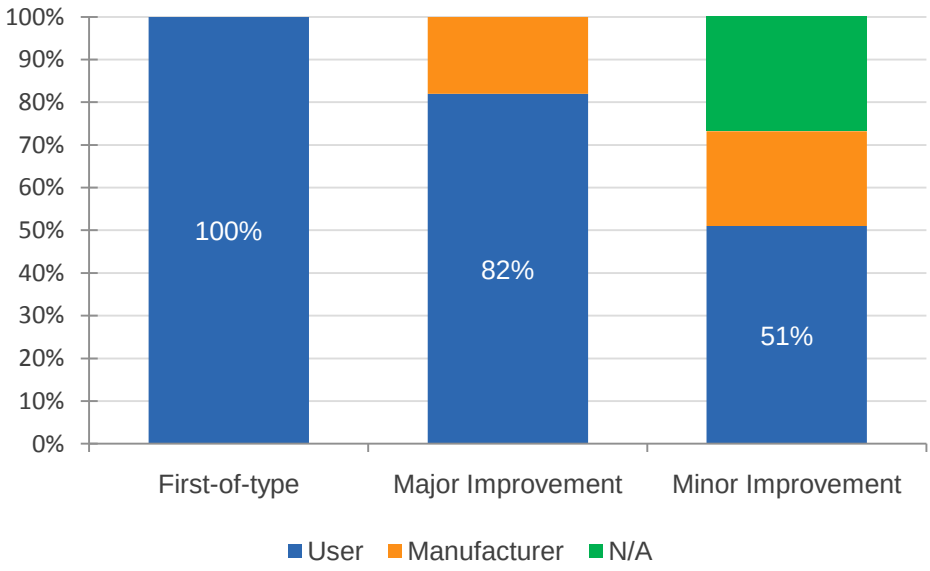


Figure 23 - Sources of scientific instrument innovation by innovation significance

[Von Hippel, 1988]

This research by Von Hippel (1988) shows the tremendous impact users can have on not only the development of new (first-of-type) products, but also on the sustained further development of existing products.

The motivation from prosumers to contribute towards new or existing products therefore does exist. Organisations developing new products should change to accommodate these prosumer contributions. The problem arises for organisations to be able to create the needed infrastructure through which prosumer interaction and input can be motivated and maximised.

Seth Godin argues that marketing efforts and product-targeting efforts should be aimed at the lead-users (Godin, 2006). Lead-users is a term coined by Von Hippel (2005) that describes the adopters and users of a product during its introduction phase. These lead-users are defined as being motivated

to modify new products to fulfil their own needs. Organisations should therefore strive to incorporate them (at the beginning of the product life cycle) into the design process (see Figure 24).

As was mentioned in Chapter 2, Toffler first referred to the term “prosumer” in 1980 in his book *The Third Wave* (Toffler, 1980). He was referring to the merged roles producers and consumers would be playing in the future. Similarities between the characteristics of prosumers and lead-users can therefore be drawn, thus establishing that it is indeed the same niche target market that organisations should incorporate to contribute towards their collaborative products.

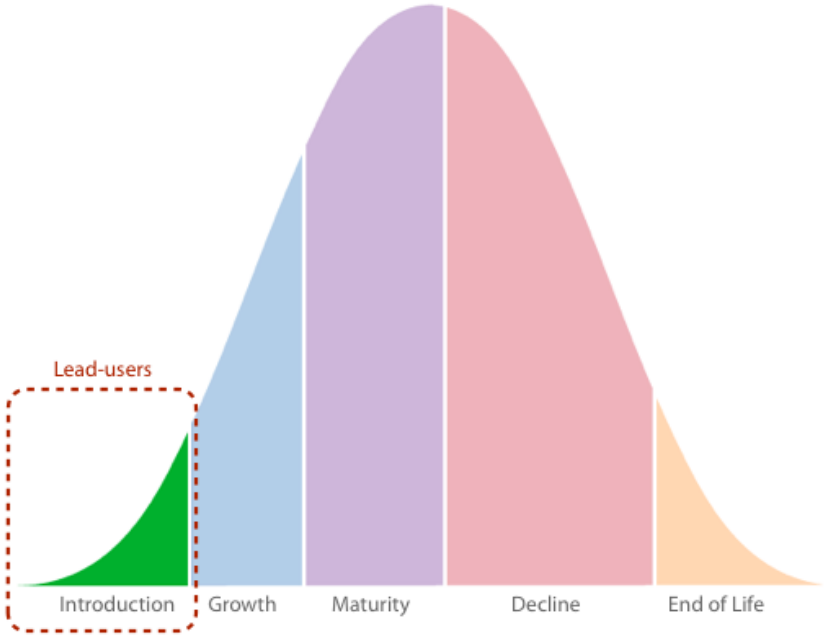


Figure 24 - Incorporating lead-users into the product development life cycle (PDLC)

There are different approaches that can be followed to achieve this symbiosis between the organisation and the prosumer. Piller, Ihl, Füller and Stotko (2004) state that there are two different variations of customer integration into the design process:

- mass customisation, and
- user innovation.

The following sections will depict methods in which organisations are incorporating input from the various external role-players (customers, prosumers or lead-users).

4.4.2.1 Platforming

The concept of platforming entails an organisation developing and launching a certain product with the aim of it being a platform to which users can add customised individual value.

The platform product should be seen as a proverbial sandbox: The organisation supplies the sand, plastic buckets and shovels and then invites prosumers to come up with creations using the supplied elements and tools, resulting in the organisation and the prosumer both gaining value from it.

The essential element in this method is that the organisation should also benefit from the value the prosumer has added to the product. It defies the point if the organisation would develop a platform, but lose all control over the prosumer's creations, thus not maximising the exploitation of the created platform.

Following are real-life examples of organisations that are making use of platforming to incorporate their prosumers in the design process. These examples will be incorporated into the development of the eventual criteria for platforming.

(i) Case example: Lego Mindstorms

Lego, the world-renowned producer of children's toys, are focusing heavily on user-generated innovation. The latest addition to their product mix, called Lego Mindstorms, includes a central processing unit (CPU), stepper motors and various sensors (sound, light, temperature and proximity), all which serve as the proverbial plastic bricks. These units form the building blocks that the prosumers can use to build their own creations. The sensors can be programmed on a computer and the data is then sent to the custom-built plastic brick toy to have the prosumer's creation come to life. Very little limitation as to the intended usage of the customised product is therefore presented.

Lego Mindstorms is a mindshift away from Lego's conventional plastic bricks aimed at children younger than 12 years. Lego Mindstorms is targeted at adults with a knack for technical challenges.

The new product range became truly "open" with the introduction of the Mindstorms community where users could share their own creations with other members of the community. Through this web-based community, the continued engagement of the prosumers ensures the success of the product range. The Lego Mindstorms product range celebrated its tenth year of existence in August 2009 (Lego, 2009).

The community members' engagement is sustained by Lego running various competitions, the online support Lego offers, as well as a continued "Global Road Trip", where a team of Lego employees visits various countries around the world to improve the visibility of the brand.

All these activities ensure sustained participation from the community members.

Figure 25 - Lego Mindstorms community page

The positioning of the product is such that it is targeted not only at children, but also at an older generation through the technical challenges it offers. It is the combination of these factors that shows the platform effect Lego is infusing into its product.

Lego is designing a product to be purposely half-completed – the other piece of the innovation puzzle is left to the creativity of the prosumer, who is not only motivated to contribute, but also continuously engaged in the community to share creations and be a part of the Mindstorms community. In this manner, all parties involved are receiving added value from the Mindstorms platform.

(ii) Case example: Apple iPhone ecosystem

Another example that reveals more genuine Open Innovation and platforming tactics is the Apple iPhone ecosystem. The original iPhone, released in June 2007, was voted by *Time* magazine as the invention of the year for 2007 (Grossman, 2007). This award was presented even before the launch of the added services that make the entire iPhone ecosystem truly “open”.

The release of the updated iPhone (dubbed iPhone 3G) saw the introduction of the supporting services that enabled the prosumers to participate in the future success of this product range: the Apple App Store and the iPhone SDK.

The iPhone SDK (software development kit) is a bundled software package, freely downloadable from Apple’s Developer website, that enables the prosumer to program applications for the iPhone product line (including the iPhone and the iPod Touch). The software bundle includes all the necessities a program developer may need to develop an application for the device. These include supporting

documentation, bug-testing software, graphical layout design software, as well as the actual programming application.

The prosumers are then persuaded to provide their developed applications to the App Store. The App Store is the commercial portal that Apple provides to its prosumers. Any prosumer can submit an application for approval, after which it is made available for purchase on the App Store. The income generated is split 30%–70% between Apple and the prosumer, respectively.

The prosumer does the programming and software testing of the application, while Apple provides support, the infrastructure and the marketing to sell the applications. This system has so far been very successful, as Philip Elmer-DeWitt suggests: there have been 800 000 downloads of the original iPhone SDK, while it is estimated that there are 50 000 active application developers (Elmer-deWitt, 2009, March 17). During the first nine months of the App Store's availability, a billion (10^{12}) applications were downloaded (see Figure 26).

This reflects the immense success the ecosystem is experiencing, although Apple has recently had tremendous negative publicity about the method in which the applications are evaluated and approved before being made available (Chen, 2009 and Apple, 2009).

The success the system is experiencing is having a negative effect on the ability of the organisation to sustain the level of quality assurance once enjoyed throughout the system.

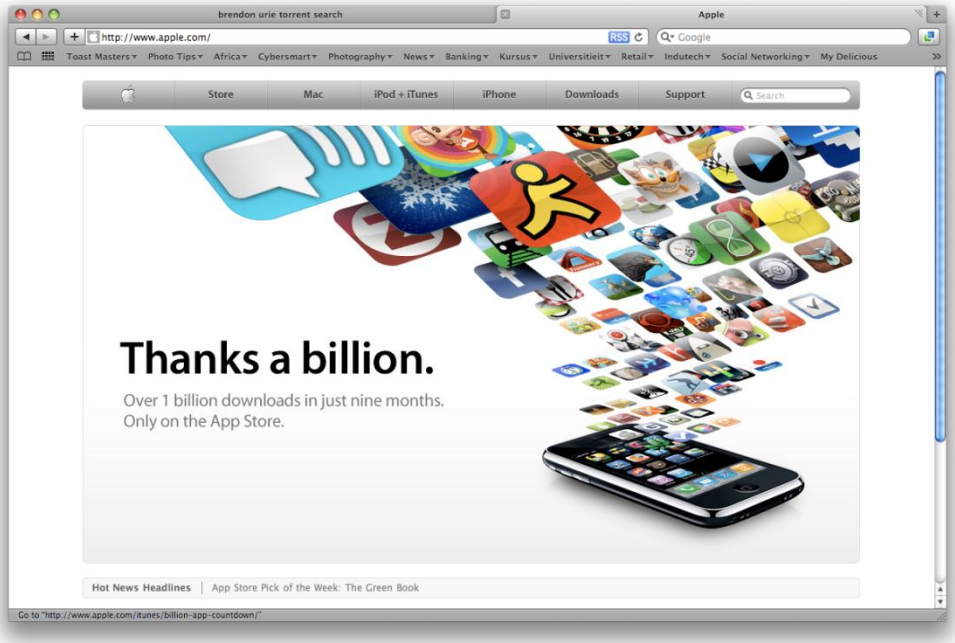


Figure 26 - Apple App Store reaches one billion downloads

The launch of the third version of the iPhone (called the iPhone 3G), the third version of the iPhone operating system, and the SDK where primarily orientated towards new tools (software and hardware)

that the prosumers could use in the development of new applications. This clearly depicts the effort Apple is investing and the value they draw from the Open Innovation ecosystem.

Apple thus designed a product with the end in mind to allow users to access and make use of the hardware, software and services developed by Apple to increase the value the clients will receive from the device.

Figure 27 depicts the entire process, and the roles and activities of each role-player in the ecosystem:

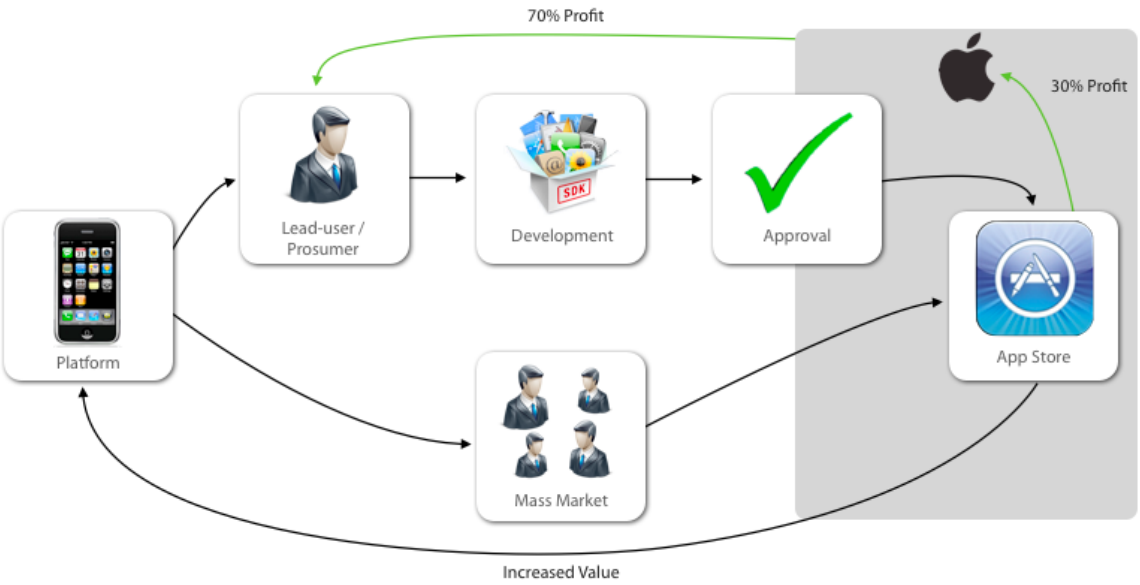


Figure 27 - iPhone ecosystem processes

This design effort on Apple's behalf opened the playing field to allow true user-generated innovations without which the iPhone's value to the customer would only have been the price-tag it currently has. Instead of Apple relying solely on internal R&D to produce new innovative products, the opening up of its software design of the iPhone is proving to increase the value not only to the organisation, but more importantly, to the customer.

Even though the financial gains for Apple from the actual App Store have not yet made a major impact on their bottom line, Elmer-DeWitt (2009, May 14), argues that the direct influence this has on the demand for the base product is immense – and this is the primary source of income in the ecosystem.

The value drawn by both parties can be described as follows:

- Apple creates a relatively inexpensive stream of income via the App Store, while their product (the iPhone product range) becomes more desirable to the general public as the additional services it offers are exactly what the customers want.
- The prosumer (which will most definitely form part of the lead-user group) receives financial rewards and recognition for his or her contribution.

As argued by Piller et al. (2004), organisations now have the opportunity to interact and include customers earlier and on a greater scale in the value-creation process. They also state that, by allowing prosumers to partly take over the design process, organisations will benefit from the innovativeness, creativity and experience of the prosumers.

The question may now be posed whether individuals will actually participate in the co-design effort if they are given the opportunity. Empirical research performed by Piller and Franke (2003) suggests that users will contribute because of two main reasons:

- the social benefits of individualisation, and
- the psychological benefit of experiencing the pride of being the creator.

Various key findings from the aforementioned examples can be identified:

- Each example illustrates a physical product being designed in accordance with a service.
- The products all incorporate electronic devices, which provide the software platform that gives the dynamic capabilities for prosumers to exploit.
- The added services all foster increased inter-prosumer communication, and the infrastructure provides a means to promote the sharing of added knowledge.
- The physical product is only a stepping stone – the more the service is used and expanded by users, the higher the value to all the parties involved.
- The application of Open Innovation, platforming, will better suit organisations or brands with a very brand-loyal customer base.

4.4.2.2 The new approach to customer input

Organisations have long since made use of various methodologies to acquire customer input into new product or service development. The prevalent method being used is focus groups, which was first conceived by Robert K Merton at the US Bureau of Applied Social Research (Kaufman, 2003).

Using focus groups to gain insight into customer behaviour involves interviewing or studying the attitude of a group of people towards a new product, service or brand. In many cases, the item in question is of a hypothetical nature, which makes it more difficult for the focus group attendees to evaluate and comment on it.

The accuracy and accountability of focus groups have also been questioned – it is claimed that 80% of new products and services fail within the first six months after being approved by focus groups (Zaltman, 2003). Zaltman (2003) emphasises the poor accountability of focus groups because their focus does not reflect experience but rather hypothetical choices. Their views are often forced from the attendees under circumstances characterised by misleading communication.

Ulwick (2002) argues that the approaches currently used by organisations to attain customer input into the design process are wrongly orientated. According to Ulwick (2002), organisations are asking the

wrong questions at the wrong time during the innovation cycle. An outcome-based approach to customer input is recommended.

This is in contrast to the more popular product-ideation input from potential customers allowed by organisations. The reasoning is that customers can't be trusted with providing solutions, since it is not their speciality. Rather, the *functional needs* and *wants* for a product or service is what is expected from the customer. This argument relates to Henry Ford's statement:

"If I'd ask my customer's what they wanted, they'd have said a faster horse."

This then, relates to the incremental innovations customers can incubate, instead of radical innovations. Instead, Ulwick (2002) recommends a five-step process on how to approach and introduce customer input into the innovation process:

- *Plan outcome-based customer interviews.* Deconstruct the process or activity the product or service should fulfil into identifiable steps or phases.
- *Capture desired outcomes of each step.* Have the interviewee consider every aspect of the process they go through when using the product or service. The interviewer should then reword the outcome to contain both an improvement, and a quantifiable unit of measure.
- *Organise outcomes.* Group related outcomes and remove duplicates.
- *Rate outcomes for importance and satisfaction.* Perform a survey with the interviewees to assess the importance of each specified outcome.
- *Use the outcomes to jump-start innovation.* Use this data to uncover opportunities for new innovations, products or market segmentation.

Following are real-life examples of organisations that are taking a new approach to customer involvement in the product development process.

(i) Case example: Procter & Gamble – Living It *and* Working It

Procter and Gamble (P&G) started two "consumer immersion programmes" in 2002, called *Living It* and *Working It*. *Living It* allows employees to spend several days living with their customers – in their homes. Through this they experience first-hand the "demands for their time and their money, the way they interact with their social networks, what's most important to them, and which products fit into their lives." (Lafley & Charan, 2008)

Working It, the other alternative, offers P&G employees the opportunity to work as shop assistants in small to medium-sized commercial outlets. The goal of this exercise is to give the employees insight into why certain products sell and others don't. It also aims to make the employees proud of seeing how the product innovations of P&G change the everyday lives of the people who live with these innovations.

The objective of these exercises is to gain an understanding of the consumer's interaction with the product, from a consumer's perspective. According to Lafley and Charan (2008), the "consumer immersion programme" has the following advantages:

- It is mandatory for all new employees to participate in the consumer immersion programme – it is P&G's way to establish continuity with the leaders of tomorrow on the importance of external focus.
- Employee job satisfaction has increased.
- Better insights into the thoughts of the consumers are obtained.
- Employees are recognised for innovative insights gained from the consumer interaction.

The importance of understanding the customer and gaining effective customer input is illustrated by Procter & Gamble's attempt to penetrate the washing detergent market in South America, which is discussed next.

(ii) Case example: Procter & Gamble – Washing detergent

The lack of proper market and consumer research resulted in P&G discontinuing Ariel Ultra – the highly successful washing detergent in the US – in Mexico only months after its introduction to the country in the late 1980s.

The poor sales were attributed to the poor foaming capability of the product and the small amount of detergent used per wash – the Mexican women didn't believe that such a small amount of detergent could wash a bundle of clothes. The poor foaming of the product was perfectly normal, since the detergent made use of highly advanced enzymes, which actually delivered a better cleaning quality.

The problem that the P&G market researchers hadn't taken into account was that the Mexican middle class, earning between $215 and $917 per month, at that time made up 60% of the population. Very few middle-class households owned a washing machine, which meant the Mexican women relied on hand-washing their laundry. They therefore wanted to see the results of the product they were using: quantity of detergent and lots of foam.

Procter & Gamble returned to the Mexican household cleaning market in the early 2000s with an adapted version of their famous Downy fabric softener. Thanks to *Living It*, P&G realised how dependent Mexican people were on water. A large percentage of the population doesn't have running water and using a lot of water for washing can prove to be a headache. Also, market research showed that Mexican women spent as much time on washing clothes as on all the other household chores combined (Lafley & Charan, 2008).

This resulted in the launch of Downy Single Rinse. Whereas the normal Downy fabric softener required various steps in the softening process (wash, rinse, rinse, add softener, rinse and rinse), Downy Single Rinse reduced the arduous task to three steps: wash, add softener and rinse.

The product, adapted especially for the lower income market, proved to be a major success.

****

Referring back to the process recommended by Ulwick (2002), Procter and Gamble succeeded in segmenting the process of washing and softening clothes and captured the outcomes the consumers wanted and needed from each phase – more detergent, better foaming, less water usage and fewer phases.

However, Manyika, Roberts and Sprague (2007) seem to contradict this. They suggest that, although the desired process within which innovation potential is researched should be segmented into logical phases, and that customer input should then be received to identify the outcomes customers want from each phase, producers should focus not only on the immediate wants of the customer, but also on the long-term benefits to the organisation.

This aspect is important to create a sustaining environment and a sustainable product mix that can be adapted and improved upon in the future, without aiming the product towards a dead-end street halfway down the product life cycle.

The following key findings can be derived from the aforementioned literature:

- The customer is always right, but this needs to be viewed with caution, because following customer recommendations will not always suffice or be realistic.
- Organisations are struggling to find effective ways to identify the needs and wants of their target market.
- The more “realistic” and practical the prototype or product testing, the more valuable the insight gained from the exercise.
- The immersed P&G employees discovered indigenous knowledge and practices that would otherwise have remained unknown. All customer-immersion projects should strive for this goal.

4.4.2.3 The idea of idea competitions

The phenomenon of idea competitions is increasing in popularity. An idea competition entails an organisation or group of organisations launching a competition where individuals (researchers, designers, prosumers or normal customers) submit solutions to a problem or objective set out by the hosting organisation, in the hope of winning a reward (financial incentive, recognition or another form of value).

Idea competitions have grown to become very popular with various companies in various industries. Companies having made use of the process include:

- *Peugeot Concurs Design Competition*: Individuals are openly invited to design a concept car, with the hope of having their dream car become a tangible prototype. In 2008 this competition was in its fifth year.
- IKEA launched a contest called *Ingenious People*, where individuals can enter to design new storage units for home media systems. Fourteen winners were selected and invited to the IKEA headquarters to receive a financial reward (Palmer, 2008).
- The *Google Online Marketing Challenge* took place for the second consecutive year in 2008, with 1 600 student teams from 47 countries participating. The aim of the competition is for student groups to run a company's online marketing presence for a specified period of time. The winner is chosen based on the professionalism of their campaign and the increase in online presence of the participating company.
- Carrol Boyes, the well-known South African cutlery designer, has since 2005 held the annual *METAL* competition, where aspiring designers can submit ideas according to set criteria. The top three designs win a financial reward.
- *MyStarbucksIdea* is a synthesis between a continuous idea competition and a modern-day suggestion box system. Prosumers are urged to submit and comment on ideas submitted by the Starbucks community, and the ideas are moderated by a Starbucks employee committee.

The advantages to the organisations responsible for the idea competitions are as follows:

- The organisation receives numerous design ideas, or possible problem solutions whilst only giving rewards and recognition to a select few of the entries.
- The competitions are usually structured that the organisation retains the rights to the entrants' Intellectual Property.
- The capital expense to the hosting organisation is minimal compared to the amount of information and knowledge received by the organisation.
- The marketing and promotional aspect of idea competitions cannot be ignored. Creating a competition where entrants are creatively stimulated is an excellent method to market and promote a product or brand. Whereas a television or printed media advertisement creates and stimulates brand awareness for a very short time (a few seconds), idea competitions requires the potential customer to ponder and be creatively active for a longer period of time, while the

brand remains active in the entrant's mind. This increases more and longer-lasting awareness and has a bigger impact than any other form of advertising will – all at a reduced cost to the organisation.

Following are examples of organisations deploying these principles.

(i) Case example: The Goldcorp Challenge

A well-known example of a successful idea competition is the Goldcorp Challenge.

The Goldcorp gold mine in Red Lake, Ontario, Canada was a struggling gold mine back in 1996, as indicated by the fact that the neighbouring mine produced 10 million ounces of gold that year, whilst the Goldcorp mine only produced 3 million ounces. It was shown that the high-grade ore ran through the Goldcorp stake as well – the only problem was to identify where exactly to drill on the 55 000 acre stake.

Goldcorp Inc's CEO, Rob McEwen, attended an IT conference on open-source programming at MIT in 1999, where he got the idea for the Goldcorp Challenge.

In March 2000, Goldcorp launched the competition, open to the general public, where any person or group of people could download the nearly 500MB of geological data (everything Goldcorp possessed), and try to determine the best possible locations for drilling.

This was a first for the mining industry, as the industry is known for its secrecy and competitors' determination to guard their own competitive advantage. The major uproar created by the launch of the competition resulted in 1 400 researchers from more than 50 countries participating in the challenge.

The judging panel decided on a collaborative partnership from Australia as the winners. They received prize money of $105 000 for their entry consisting of a 3D-generated representation of the Red Lake stake.

Four of the winning entrants' top five recommended sites have been drilled with each drill striking success. In comparison, where Goldcorp Red Lake was producing 53 000 ounces of gold per annum at a cost of $380 per ounce in 1996, during 2001 they were producing 504 000 ounces of gold at a cost of $59 per ounce at a time when gold was trading at $307 per ounce.

The interesting fact is that not one of the winning entrants has ever visited the stake for which they made recommendations (Tischler, 2002).

(ii) Case example: Threadless.com – Clothing apparel

Another interesting example of an immensely successful ongoing idea competition is the clothing design and production organisation, Threadless.

According to Piller and Ogawa (2006), Threadless has succeeded in converting their marketing research into increased sales, and in reducing the risk of carrying inventory of unwanted items.

The advantage lies in the Threadless business model which incorporates prosumers in the design and evaluation process (before production commences). All t-shirt designs are submitted by prosumers, after which the proposed designs are displayed to the Threadless community to be evaluated (via the Threadless website).

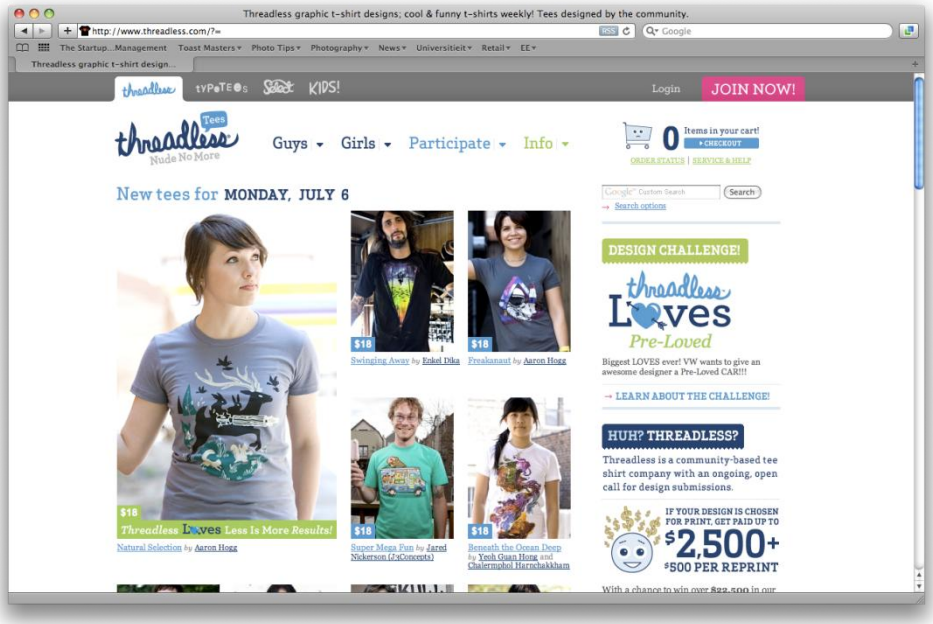


Figure 28 - Threadless, the community-driven online apparel store

[www.threadless.com]

Only designs that have gained sufficient approval from the public will be put into production to be sold via the Threadless website. This process thus ensures that the products being produced are definitely in demand, as it is the demand for the product that put it into production in the first place.

Threadless, among other similar services, can be categorised and defined as “speculative work”, or “spec work”. Speculative work basically entails a contributor (designer, planner, etc.) having to complete a job to serve as a proposal or application, before any guarantee of compensation or recognition is made. This model has received a lot of negative publicity, since the hosting organisation will only reward one winning entry, while various entrants have put in an effort only to receive no compensation for their effort (Riley, 2009). Refer to Figure 29 for a graphic depiction of the process and the responsibilities of the different role-players.

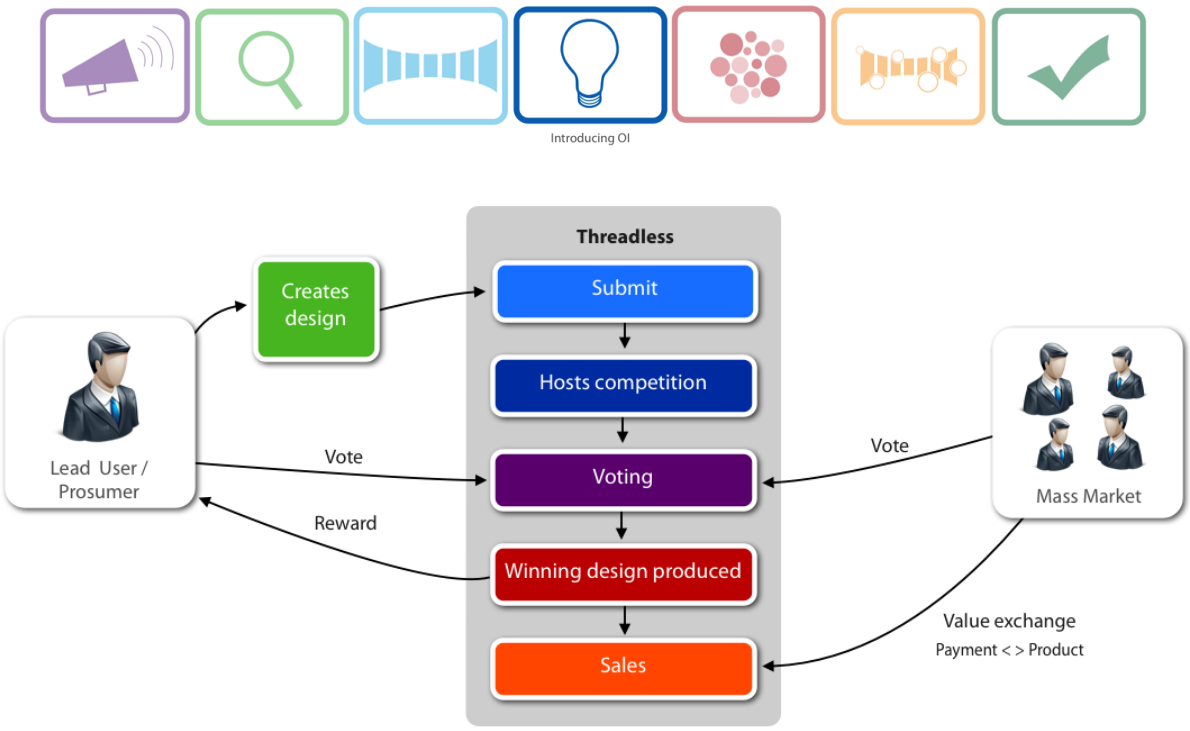


Figure 29 - The collaborative process followed by Threadless

It is therefore important to inform the prosumer base of the value of their input and the nature of the competition or collaborative environment. Open communication is thus very important.

(iii) Case example: Idea Bounty

Interview conducted with Idea Bounty CEO (Riley, 2009)

Founded in 2004, Idea Bounty is a South African based organisation that specialises in idea competition management (ICM). Idea Bounty was started as a subsidiary of Quirk e-Marketing – an award-winning and very successful e-marketing organisation situated in Cape Town, South Africa.

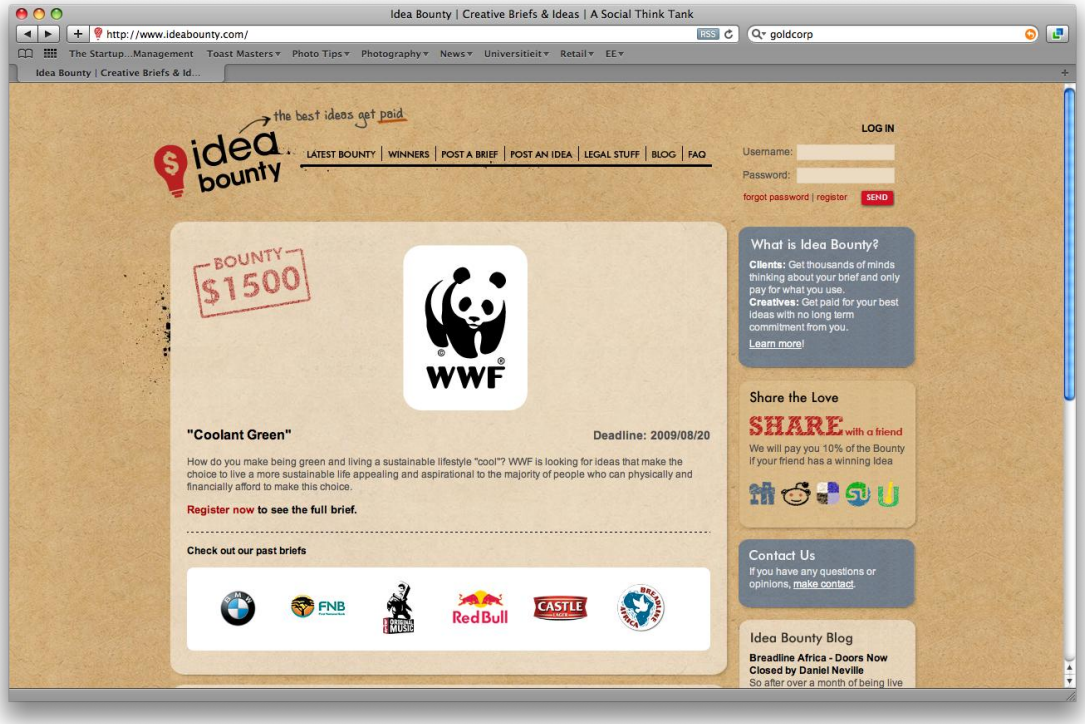


Figure 30 - Idea Bounty's home page

Although Idea Bounty is a subsidiary of Quirk, the two organisations operate separately from each other.

As mentioned above, two different kinds of idea competitions exist:

- **Speculative work ("spec work")**
  The request for participation requires finalised work, thus concepts that can be implemented in their entirety as a solution to the proposed challenge/problem. There is thus no guarantee that a participant will receive any remuneration for their submitted work. After the period of entry is closed, the onus lies with the hosting organisation to basically choose a complete solution for their proposed challenge.

- **Intellectual sourcing**
  The greatest difference between "spec work" and intellectual sourcing is that the proposed challenge of and required solutions for intellectual sourcing are more "open-ended" in nature.

> Thus, these idea competitions are not created to deliver a complete, implementable solution to a proposed problem.
>
> Rather, they are designed to tap the intellectual thinking of the clients – to gain a better understanding of their way of thinking and to eventually gain information that can be integrated in the development of an implementable solution (Riley, 2009).

Idea Bounty made a conscious decision to host only intellectual sourcing-type idea competitions, because “spec work” competitions exploit the creative skills and other resources (time, effort, money) of the participants in a negative way.

A lot of care is being taken by Idea Bounty to ensure the creative safety of their community. Idea Bounty has realised that their prosumer community is their most important asset, therefore their well-being and in a sense protection, are of the utmost importance.

As of 12 March 2009, Idea Bounty had 2 068 registered creatives (or “bounty hunters”, as they are called). According to Riley (2009), this number increases on average by two or three new registrations per day.

Internal research performed by Idea Bounty found that each instance of an idea competition attracts entries from 8–10% of their registered community. The more interesting finding is that Idea Bounty operates with an 8–10% attrition rate per idea competition instance. This means they lose about 8–10% of their community members per competition instance.

According to Riley (2009), the reason for this is the emotional value that the participants add to their entries. In the case of a participant not being rewarded for their effort, the participant may feel ignored, and thus withdraw from any future participation.

Therefore, Idea Bounty puts a lot of emphasis on marketing, not only to retain existing community members, but also to attract new members. As is the nature of the service offering, all marketing efforts are done through the use of Web 2.0 technologies – blogs, micro-blogs and social networking sites.

The advantages hereof are twofold:

- it is inexpensive, and
- it targets the correct target market.

The individuals that Idea Bounty wants to attract to its creative community are ones that make use of these services. They are the creative types that are willing to participate in such an e-participatory environment and, more importantly, who serve as viral marketers themselves.

As the Idea Bounty community basically consists of web content creators, their social interactions via their own personal social networking activities serves as an excellent form of viral marketing.

According to Riley, even during the run of a brief they have found creatives who would state and share their thoughts, ideas and efforts through some or other form of personal social networking.

Marketing, in any form possible, is clearly very important to the success of any idea competition. Just as important is the marketing of each idea competition brief to gain interest and recognition for a specific idea competition instance.

Idea Bounty does this by actively using its existing marketing communication channels (blogs, e-newsletter, e-mails to community) to promote any activity to new clients or publicise the status of existing competition instances. Also, industry experts in the specific client's industry or service are regularly interviewed and made public on their website to promote communication.

This continuous communication is very important to sustain a constant awareness in the minds of the Idea Bounty community. As Riley (2009) puts it: "There is a constant battle to replace users (creatives)".

Intellectual property (IP) protection forms the core of Idea Bounty's business model. Whereas other organisations would create a website, and create the Terms & Conditions as a secondary goal, Idea Bounty works the other way around.

> The importance of Intellectual Property Rights (IPRs) forms the basis of Idea Bounty. In their case, "the legal stuff" (as they call it) was finalised before any action to create the website was started. Idea Bounty realises the sensitivity associated with Intellectual Property, especially if it still as raw as a creative's idea. Therefore openness and traceability form a primary function throughout the whole operation.

Every interaction between a creative, Idea Bounty and the client is therefore kept as open as possible and as traceable as possible (every action is time and date-stamped and stored electronically).

Idea Bounty also urges creatives to keep as close a record as possible of their ideas. According to their website, Idea Bounty protects the expression of an idea. The copyright protection of the idea is subject to the amount of proof that exists thereof. Consequently, every interaction that happens through or on the Idea Bounty website is logged and thus increases the traceability of information regarding the ownership of the IP.

Although all communication is treated as open as possible, there is no direct communication between the client and creatives. This "middleman"-position that Idea Bounty fulfils is in essence its strategic asset. Therefore the protection of this community is regarded as high priority – whether attracting new creatives, protecting them from direct client abuse or offering a safe platform for IP sharing and protection, Idea Bounty treats its creative community with respect in the hope of it being a mutual attitude.

The process that Idea Bounty goes through with each new client, from initial contact to awarding the "bounty", is described as follows by Riley (2009):

1. Initial contact is made between Idea Bounty and the client.
2. Idea Bounty explains the process, mechanics, as well as the scope of its service offering.
3. Through workshops, interviews and contact sessions Idea Bounty facilitates the client to develop the first version of the “brief” for the challenge.
4. It is during this period that Idea Bounty sets out to determine the real need of the client and what it is the client wants out of the exercise.
5. The proposed brief is further reworked by Idea Bounty to clarify the requirements thereof, and to align the brief with their general approach to briefs.
6. The brief goes live, accompanied by the necessary media and marketing hype.
7. Marketing is done on a continual basis throughout the duration of the challenge.
8. Idea Bounty manages the interaction with both parties (client and participating creatives).
9. This includes the answering of questions, or attention needed for any other requests by either party.
10. There is at no stage direct contact between the client and the creative. Although the client can view all ongoing activity via the website through their own personalised dashboard, anonymity is maintained between the parties involved.
11. Idea Bounty delivers filtered entries as the service’s output to the client.
12. This filter consists of the basic criteria and requirements set up by the client.
13. Idea Bounty thus does minimal value-adding work to the proposed entries.
14. The client assesses the entries and decides on a winning entry.
15. It is the sole responsibility of the client to evaluate the entries and choose a winner.
16. Idea Bounty assists with the preparation and presentation of the award (or “bounty”) to maximise the marketing and public relations of the participating organisation.

Figure 31 gives a graphic depiction of the processes Idea Bounty performs between its different clients and its creative community.

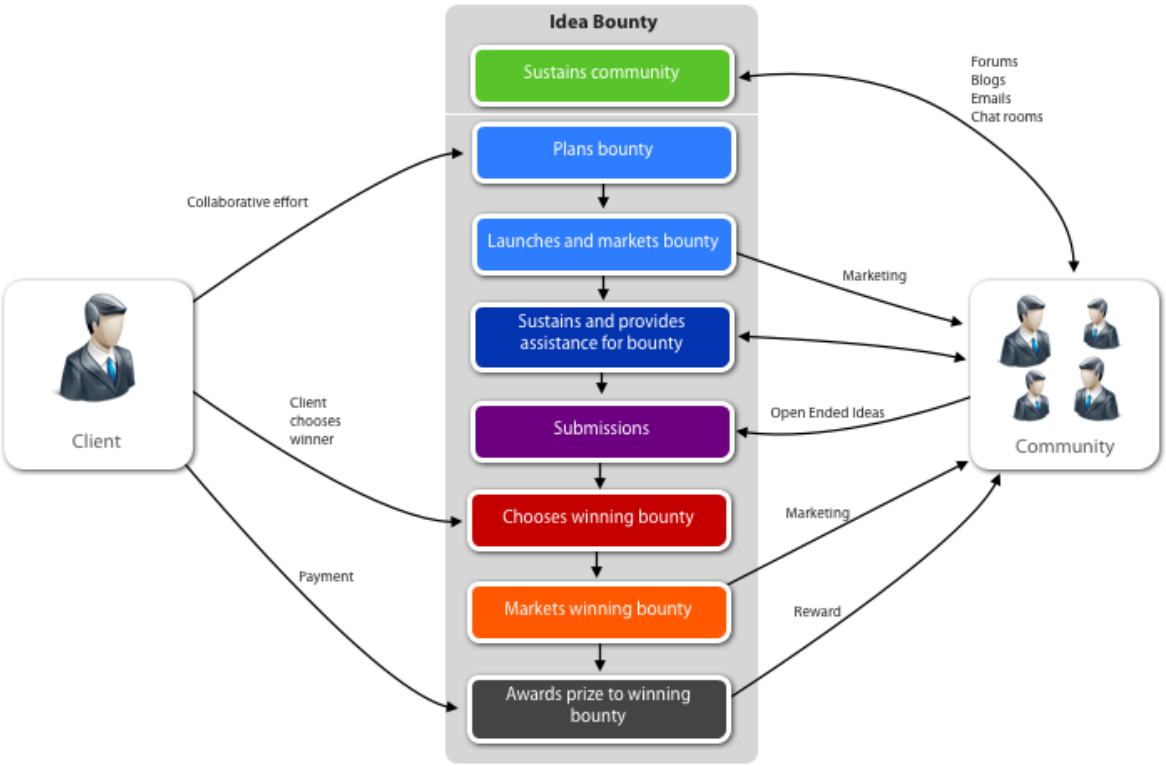


Figure 31 - Idea Bounty's collaborative process

Various key findings can be derived from the aforementioned examples:

- Combining the excitement of competition with the challenge of creative stimulation, the possibility of being rewarded creates the potential market for idea competitions.
- The competitions should reward and recognise competition winners in relevant ways of value to the market segment that will enter the competition.
- The terms and conditions, legalities and usage of Intellectual Property should be clearly communicated with the prosumer base.
- The usage and exploitation of the internet and its capabilities increase the effectiveness, reach and success rate of idea competitions.
- Promoting the brand, product or product line should be exploited, as this provides a relatively inexpensive means of marketing.
- The solver/creative base is very important. This is the idea competition management (ICM) company's primary resource. Creating a bounding, lucrative environment in which this community can function is crucial.
- The correct set-up and systemisation of IP handling is essential to the success of such an idea competition.
- Marketing, to both clients and the solver/creative community, is of paramount importance to sustain the success of an idea competition.

4.4.3 Suppliers, peers and outsourcing Open Innovation

4.4.3.1 The advantages and challenges of suppliers' Open Innovation contributions

Whereas organisations have relied solely on the internal development of products, partially outsourcing manufacturing, the concept of Open Innovation suggests a different modus operandi. The influence and potential source of innovation that come from wider in the supply chain cannot be ignored.

Organisations, especially in the manufacturing industry (original equipment manufacturers) have in the past made use of a vertically integrated silo approach to design, development and manufacturing. Product designs and specifications were created internally, after which the design in question was expected to be manufactured either through internal or outsourced manufacturing.

Lacking communication between designers (clients) and the actual supplying manufacturers is a common occurrence, with suppliers always having to follow the requirements set out by their clients. The clients, in turn, have very limited or no knowledge of the inner workings or capabilities of the supplier and/or manufacturer. This results in the higher supply chain link in various instances having to research and design, or even outsource, the capability to produce the parts in question.

Open Innovation, in contrast, promotes inter-supplier and client communication, and aims to foster an environment where client and supplier/manufacturer are equal-level peers in the design process. Instead of the client being the party who sets out rigid specifications, a collaborative, horizontally orientated environment is recommended.

Increasing the participatory involvement from suppliers will increase the efficiency of the design and delivery processes. Instead of clients creating all the specifications on their own, the inclusion of supplier and manufacturer input produces faster achievable results, since the capabilities of the supplier/manufacturer can now be discussed and the efficient sharing of knowledge will promote the production of the part in question in a cheaper, faster manner.

The greatest advantage of exploiting the suppliers' and manufacturers' input lies in the increase in innovation speed and the potential improvements of the efficiency of the supply chain. Also, the decrease in cost offers an advantage to Open Innovation practices towards supply chain integration.

A study done by INSEAD and Booze, Allen and Hamilton on the globalisation of R&D (Doz et al., 2006), found that the advantages of integrating and optimising an organisation's R&D department with a network of R&D centres increases the speed of innovation and also the quantity thereof (see Figure 32)

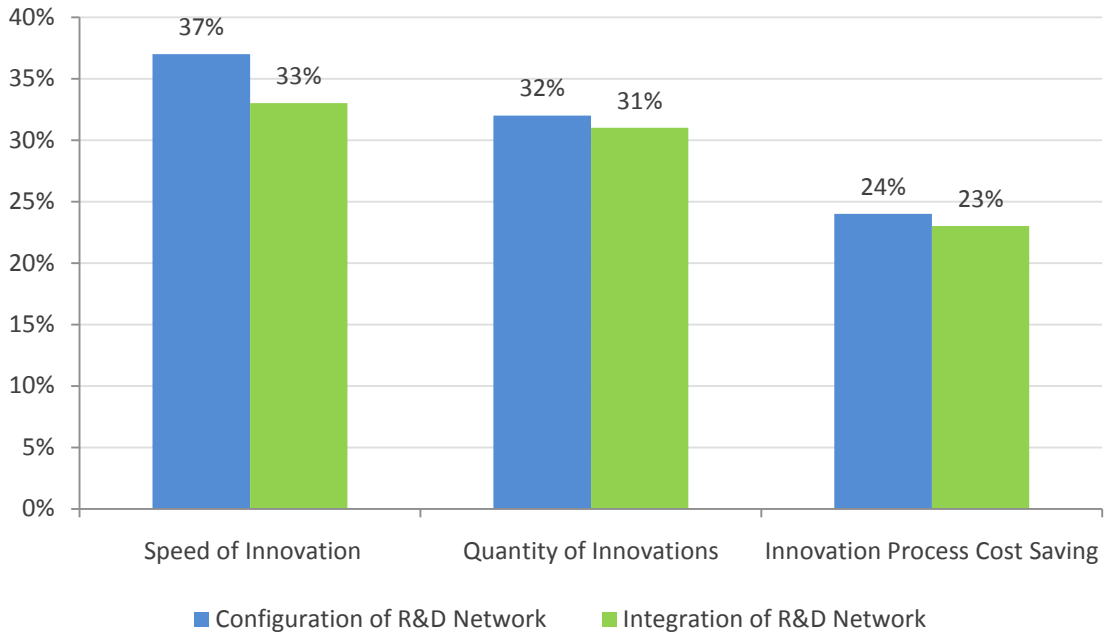


Figure 32 -Potential innovation improvements

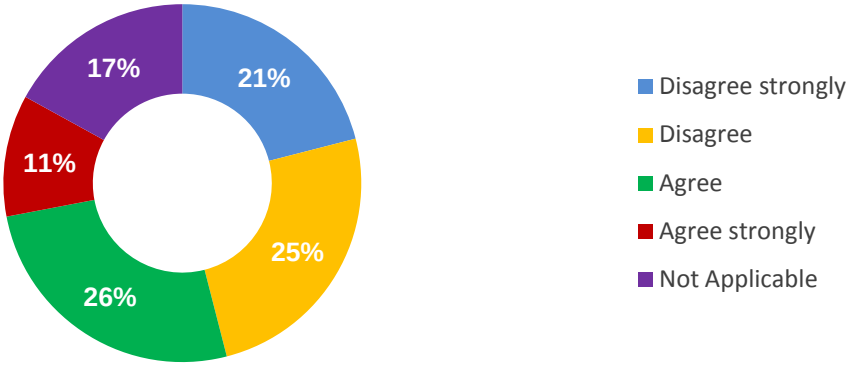
The potential increase in efficiency will be discussed in the examples of supplier contributions to Open Innovation following Figure 33.

Another illustration of the importance organisations are placing on collaboration comes from PWC's 11th annual CEO survey (titled "Compete and Collaborate"), which reveals the importance CEOs are placing on networks to succeed in the modern-day enterprise. The responses of the 1 150 CEOs interviewed for this survey clearly show that networking as a business competence is reaching a new level of importance (PWC, 2008). Figure 33 depicts the importance organisations are placing on networking, as well as the benefits they are experiencing from this effort.

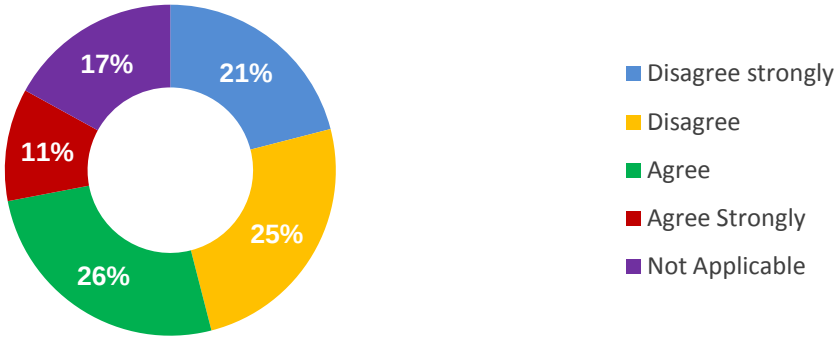
The survey also revealed that currently, organisational networks are primarily orientated towards sharing best practices, and "creating innovation". Although CEOs are grasping the concept of networking, it is not yet fully adopted in practice.

The concept of supplier integration is further explained through the case example of Boeing.

Networks will be a defining organisational principle for businesses



Establishing networks remains a secondary busines activity for my company today



To date, the costs and risks of networks outweigh the benefits

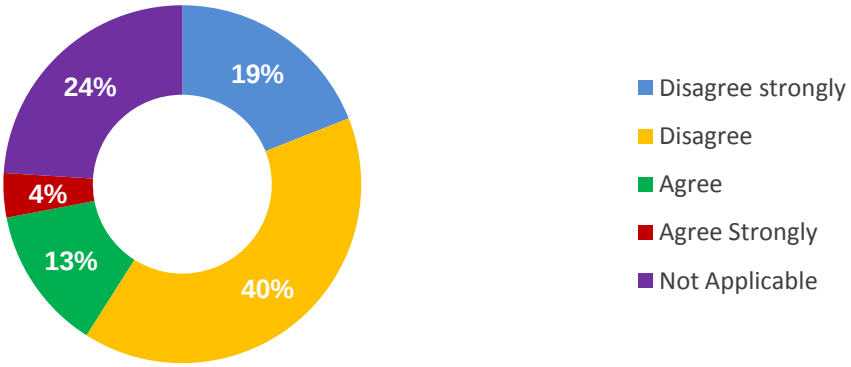


Figure 33 - PWC CEO Survey Results

[PWC, 2008]

(i) Case example: The Boeing 7X7

Boeing started development of the 7X7 project during the latter half of the 1990s. At the initiation of the project, Boeing assembled a team of more than 1 000 personnel from their various suppliers to assist in the development of the vision and goal of the project.

The objective was to design a passenger aircraft that is more fuel efficient per passenger, and can thus fly longer distances on less fuel.

In the past, Boeing would design and develop the specifications for all the parts, and then only have the suppliers develop the fully specified part. The 7X7 project introduced the new role Boeing would fulfil in the global supply chain – that of systems orchestrator.

Boeing then proceeded to create the platform for over 100 suppliers from six different continents to collaborate in a truly horizontal manner to share information, knowledge and various designs. On the previous models, Boeing specified that all supplied parts be sent to their assembly plant in Everett (US) to be assembled by the Boeing employees, for which the assembly process would take up to 17 days.

The goal of the new 7X7 design was to create a more modular approach to the design and assembly, with the responsibility of specifications of various subassemblies being given to contractual peers/suppliers. This approach has reduced the assembly time from 17 days (Boeing 777) to three days on the 7X7 design.

The responsibility for the design of the various subassemblies was given to the supplying manufacturers – Boeing merely gave the overall outcomes expected from each component or assembly, with the remainder of the design specifications being the onus of the suppliers. In comparison, the electronic design specification document for the 777 was 2 500 pages long, while the document describing the similar requirements for the 7X7 project was a mere 20 pages (Tapscott & Williams, 2008).

The involvement of the suppliers as peer designers has obviously increased the speed of the design and development process, which results in an increase in design efficiency. Instead of Boeing giving design orders without knowing the inner workings of the supplier's organisations, the designs themselves are done by the suppliers, while Boeing fulfils the role of ensuring the compatibility of the various subcomponents and subassemblies.

To ensure successful integration, Boeing partnered with Dassault Systems to create the "Global Collaborative Environment" – the real-time collaboration system of which all suppliers and non-technical members are a part. The system allows the peers to review, assess and revise all designs from all other parties in a centralised portal, while saving precious time and expenses during the design phase.

The inclusion of suppliers as designers also ensures that the contributing parties are accountable for their designs and contributions – more so than would have been the case if Boeing were carrying the responsibility of all component designs. This ensures that the peers approach the design in a more responsible way.

It is estimated that 80% of the 7X7 design will be done by suppliers (Tapscott & Williams, 2008).

The difficulty for Boeing lies in managing a project on this global scale without intervening in the design and manufacturing processes of the contributing peers. Also, the sharing of proprietary knowledge between suppliers (and from Boeing) is proving a difficult obstacle to overcome, because the suppliers want to protect their own Intellectual Property, but also want to share knowledge to a certain extent to improve the project.

4.4.3.2 Harnessing suppliers' Open Innovation

Tapscott and Williams (2008) recommend the following lessons from supplier-introduced Open Innovation:

- *Focus on the critical value drivers*. It is essential for organisations to emphasise and focus on their core capabilities and create partnerships and collaboration for all other tasks.
- *Add value through orchestration*. Organisations that are in the position to orchestrate supply chain collaboration should strive towards a collaborative peer-produced environment.
- *Instil rapid, iterative design processes*. Decentralisation and collaboration lead to rapid, iterative design processes where each supplier can optimise their contributions through trial and error without limiting the speed of the entire project.
- *Harness modular architectures*. Organisations should strive to provide the requirements of components (not specifications) and only focus on specifying the component interfaces. The detail design should be done by the supplier.
- Create a transparent and egalitarian ecosystem.
- Share the costs and risks.

The greatest realisation concerning supplier integration in an Open Innovation context is that it requires a different approach to customer inclusion in the innovation process. Whereas the intended goal of customer immersion is to gain as much input as possible, supplier inclusion will mostly occur on a one-to-one basis.

Therefore, supplier integration is more suited for a business-to-business environment (B2B). These relationships will require extensive effort, and each should be handled individually.

4.4.4 Network collaboration

As was depicted in Figure 22, network collaboration refers to Open Innovation on a peer or even a competitor level. Whereas the supplier/outsourced approach refers to organisations working together with the same end product in mind, network collaboration involves joining forces and alignment in pursuit of a much broader goal – even between competing organisations.

Added to this category is the inclusion of inputs from sources outside the supply and value chains – the input gained from individuals or organisations not party to the inner workings of the organisation. These inputs can be gained via electronic channels, which have been especially created for these situations, as discussed in the following two examples of organisations deploying this principle in their businesses.

4.4.4.1 The Big Blue opens up

An example of network collaboration is IBM and its open-source software activities.

There has always been rivalry between IBM and the Apache web-server software (which is open-source), until 1998 when IBM decided to abandon its own efforts and rather support the Apache movement. At this point in time Apache accounted for more than 50% of all web-server software, while IBM had less than 1% market share.

Instead of battling over a larger market share, the “Big Blue”, as IBM is referred to, joined forces with the Apache Software Foundation, and on 22 June 1998 IBM announced that it would support the Apache server on all its new products, instead of wasting valuable resources trying to attain a larger market share with its own web-server software.

This movement led to IBM realising the potential of supporting the open-source software movement. The other well-known open-source phenomenon, Linux, caught the attention of IBM during the latter part of 1998.

Linux, which is an open-source computer operating system (OS), is distributed under the GNU general public licence. This licence stipulates that any person can obtain, alter and redistribute the operating system, as long as recognition is given to the original creators.

In the same sense that IBM realised they were wasting their efforts on web-server software, they realised that the struggle to create a new operating system (after the failure attempt of their OS/2 product) was a waste of resources. Instead, IBM opted to support and pre-install Linux on all their new commercial systems.

Thus, in 1999, IBM formed a Linux development group, which specialised in the further development of the Linux OS. It was soon realised that the brand respect surrounding the “Big Blue” title meant very little to the individuals who create and maintain Linux. It was therefore decided that the IBM employees who participated in the Linux project had to communicate using exactly the same methods as the global base of Linux contributors – bulletin boards, e-mail and instant messaging.

Tapscott and Williams (2008) suggest that IBM invests about $1 million on an annual basis in the Linux partnership, while receiving a benefit worth $1 billion in saved research and development costs – a great investment that is not only advantageous to IBM and the Linux community, but has also left an irreparable dent in the competitors' operating business (Microsoft and Sun).

This serves as an example as to how a company reached out to its peers, who were in fact the competitors in the OS market. The differences were put aside, and the IBM and Linux community are now working towards a unified goal with beneficial results to all parties involved.

4.4.4.2 E-Bay for intellectuals

The idea of sharing proprietary knowledge with a myriad strangers, including industry peers, competitors and even suppliers, is a new and unfamiliar concept. This was also the finding made in the workplace: a study done by Walsh and Hong in 1998 revealed that only 14% of experimental biologists were willing to share their knowledge and findings (Walsh & Hong, 2003).

Since then, there has been a new tendency to share, join forces and collaborate – for the greater good and unified goal within various industries. A turning point example hereof was the statement by former US president Bill Clinton in 2000 concerning the Human Genome Project (HGP). Clinton announced in March 2000 that the genome sequence should be made public for all to benefit from – regardless of the $3 billion price tag of the decade-long research project.

Today this open, collaborative phenomenon has been extended to produce services like the intellectual e-Bays of the new interconnected world. Tapscott and Williams (2008) refer to these services as "Ideagoras".

(i) Case example: Innocentive

The most well-known example of an Ideagora is Innocentive (www.innocentive.com). This web-based organisation was started in 2001 by the pharmaceutical company Eli Lilly to provide a platform for Eli Lilly's R&D department to post unsolvable research problems. It has since become an independently run entity, with more than 175 000 individuals (called "solvers") offering their problem-solving services to the various organisations seeking solutions to problems (called "seekers").

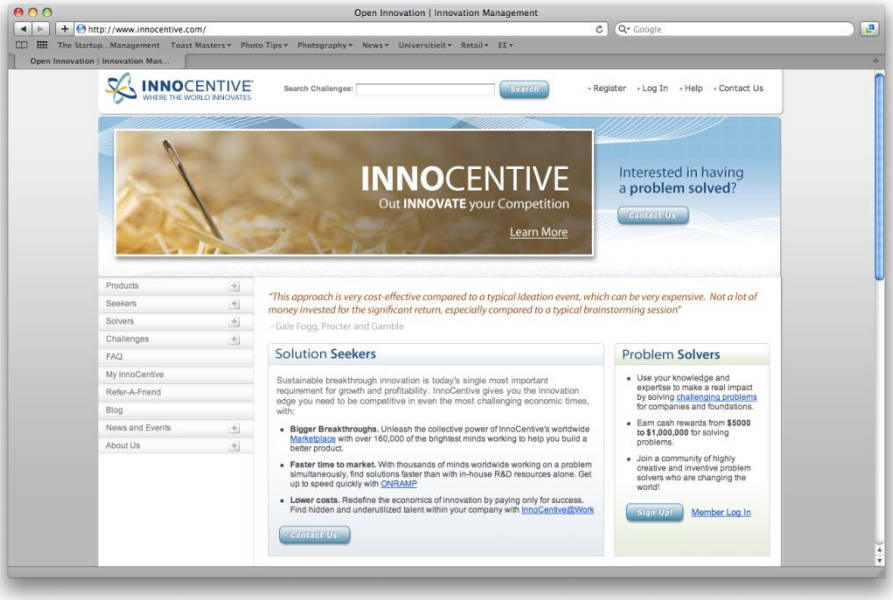


Figure 34 - Innocentive's home page

[www.innocentive.com]

Solvers can submit possible solutions to problems (challenges) posted by seekers, in the hopes of being financially rewarded by the seeker if the seeker were to determine the solution plausible.

According to Tapscott and Williams (2008), included in the seekers-base are 35 of the Fortune 500 companies, paying upwards of $80 000 each towards annual membership fees.

A recent study on Innocentive revealed that of the 166 challenges posted on Innocentive during the duration of the study, 49 were solved – yielding a success rate of 29,5% on problems that were unsolvable by the internal R&D bases of the organisations (Lakhani, Jeppesen, Loshe, & Panetta, 2007).

It is interesting to note that the study revealed that the probability of being a winning solver (i.e. having solved the problem) is significantly and positively correlated with a desire to win the prize and with whether the solver has the intrinsic motivation – like enjoying problem solving and solving tough problems (Lakhani et al., 2007).

Innocentive (like Idea Bounty) thus specialises in providing (and protecting) the community to which the organisations can pose their unsolvable problems.

Various other Ideagoras, each with its own twist, have become successful in the recent past. Table 3 includes a short description of the most renowned Ideagoras

Table 3 - Other Ideagora service providers

Name	Web address	Description
Yet2.com	www.yet2.com	Yet2 specialises in being an e-marketplace for IP. It is claimed that intangible IP comprises as much as 75% of an organisation's market value. It provides a platform for organisations to trade, sell or lease IP which had been researched and created, but is of no use to the organisation.
9 Sigma	www.ninesigma.com	9 Sigma is in direct competition with Innocentive. It is claimed that 9 Sigma offers a larger solver base than Innocentive.
YourEncore	www.yourencore.com	An Ideagora dedicated to retired scientists and engineers, who offer the competitive advantage of industry experience.
Quirky	www.quirky.com	Quirky offers a different service. The entire product development process is opened up. Each stage, from the product's name to the product's colour is segmented to be a competition on its own. The competitions for each stage are hosted by Quirky, and the community members vote for the best proposals for each, while the individual winners will receive a percentage of the profits made from the eventual product. This is a combination of the Threadless, Idea Bounty and Innocentive offerings.

As another example, Rae refers to the "cross-industry network of leading companies" that makes up the Internet Home Alliance of the Continental Automated Buildings Association (CABA) (Rae, 2008). This diverse group of organisations is working together towards the unified goal of designing the home of the future.

CABA has created the Digital Kitchen Initiative, with organisations as diverse as Whirlpool, Bell, Cisco, Direct Energy and Microsoft working together. The goal of this initiative is to design the kitchen of the future as the nerve centre of the home.

The advantages lie not only in the risk and reward sharing of the various participants, but also in the beneficial differences in viewpoint that they bring to the proverbial kitchen table. Lakhani et al. (2007) found that in the Ideagoras set-up, the further the solver's field of expertise is from the problem's focal point, the more likely the problem is to be solved.

It is also suggested that the more heterogeneous the knowledge base is, the more likely it is that the problem will be solved. Organisations can't support such a diverse base of expertise and knowledge internally as can be combined in a collaborative environment between various organisations.

Hansen and Birkinshaw (2007) suggest two approaches to building an external network. The first is to develop a solutions network which aims to find solutions to already identified problems. The second approach is a discovery network, the main goal of which is to discover new opportunities to innovate (Hansen & Birkinshaw, 2007).

(ii) Case example: Shell's Game Changer

Shell, the major Royal Dutch oil company, has been making use of a discovery network since November 1996, although at that time it was only on an internal basis. Their process, called "The Game Changer" has evolved from a project with $20 million in seed money available for radical employee ideas, to an open-for-all portal where ideas can be submitted.

Any individual with a worthwhile idea is invited to give a short, 15-minute presentation about the idea, after which the Game Changer panel decides the fate of the idea. The Game Changer prides itself in the speed of deployment – seed money to the value of $600 000 can be awarded within 8–10 days. This is exactly what is needed to keep up with the pace of innovation.

The Game Changer has now evolved to invite all freethinking individuals to submit ideas via their website, or to collaborate via newer (Web 2.0) interfaces, like the Shell Game Changer location in the virtual avatar world of Second Life. Accessibility is of the utmost importance to the Game Changer team, as more ideas mean a higher probability of success.

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Various key findings can be identified from the aforementioned examples:

- The level of value in networking is directly related to the number of collaborative partners or the number of challenge solvers. A larger number of participants can thus result in a faster or more accurate solution.
- The aim should be to attract participants with a diverse set of knowledge and expertise.
- As is the case with IBM and Linux, it is wise to focus on core competencies and to find innovations within these areas of expertise. Collaboration on areas that are not at the core of the organisation's growth is recommended.
- The reward to all participating parties or entrants needs to be carefully decided so as to maximise the relevancy and status of the reward.
- The barriers to participation have to be minimised. This is why Ideagora services are proving popular. The participating party has to access a single platform to find a myriad exciting, challenging problems.

4.5 Chapter summary

The objective of this chapter was to create the foundation and understanding of what Open Innovation entails.

This was achieved by firstly providing the formal definitions of the concept. Thereafter it was further illustrated by comparing the concept with that of traditional, Closed Innovation and highlighting the differences between the old and new thinking.

The research progressed to illustrate the different sources from which an organisation can derive Open Innovation input. These sources were then used to introduce real-life examples of organisations already making use of the Open Innovation concept in their daily operations.

It is evident from the literature that Open Innovation will ultimately manifest on an operational level via the new product development (or innovation) process. However, the concept and organisational mindshift should germinate from a strategic management level.

It is only via the drive and motivation from CEO-level input that employees will be convinced to “open-up” and re-evaluate every proposed action on the basis of Open versus Closed Innovation. This visionary drive was foreseen by A G Lafley, the CEO of Procter & Gamble, who challenged his organisation to incorporate 50% “outside input” in all its new products (Tichy, 2009).

The knowledge derived from the investigation of these real-life examples (key findings) will be used in developing the specifications (characteristics) of the Open Innovation models in the following chapter.

5 defining & development of OI models

Chapter 5 focuses on the definition of the five implementable Open Innovation models that were developed. Each model will be given a formal definition, as well a set of criteria (based on the literature and the research done in the previous chapters) which is intended to assist the implementation of each specific model in a realistic context.

The culmination of the research done in the previous chapter (practical examples, case studies, the interview with Riley on Idea Bounty) will be used to categorise Open Innovation into and define five implementable models.

The allocation of these developed models to the Fugle Innovation Process Model (see Chapter 3) will be done in the following chapter (Chapter 6), based on the characteristics developed for each model in this chapter.

5.1 Introduction

In this chapter, the focus is on the content of each of the Open Innovation (OI) models discussed in Chapter 4, namely platforming, idea competitions, customer immersion, collaborative product design and development, and innovation networks. The focus will more specifically be on the definition, development and specification of each model's requirements for effective deployment and usage, as well as the advantages and disadvantages of each.

Since Open Innovation is such a relatively new and academically unexplored topic (according to Fredberg et al., 2008), nearly all theoretical assumptions will be based on research from real-world examples. This is in direct contrast to the normal process of developing the theory first and then applying it in practice. Fredberg et al. (2008) stress the need for a deeper academic understanding of Open Innovation.

Pisano and Verganti (2008) offer a framework for the classification of different Open Innovation models based on the level of openness (participation) and the level of hierarchical control (governance) thereof. This is graphically presented in Figure 35.

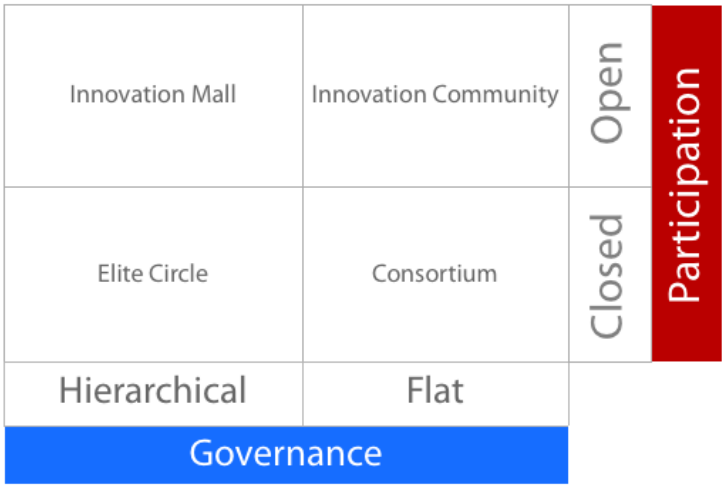


Figure 35 - Collaboration framework

[Pisano & Verganti, 2008]

Each of the five Open Innovation models will be placed within the abovementioned framework. When introducing one of these model in their organisation, this should provide the organisation with guidance regarding the levels of governance and participation required.

Together with the collaboration framework depicted in Figure 35, the aim of this chapter will be to categorise and assign each model to the different segments of the Fugle model.

To reiterate, the following Open Innovation models were developed from the literature:

- Platforming
- Idea competitions
- Customer immersion
- Collaborative product development
- Innovation networks.

Each of these models will now be defined and their characteristics – the criteria applicable to each, as well as the advantages and disadvantages of each – will be discussed.

5.2 The development of platforming as an OI model

5.2.1 Defining platforming

The concept of platforming was first introduced in section 4.4.2.1. The following definition has been created to further clarify this concept:

> *Platforming is the technique of developing and introducing a base product with the purpose of providing a basis for prosumers to access, customise and exploit certain facets of the base product to extend the capabilities of that product while adding value for all parties involved.*

Figure 36 gives a graphic representation of the intended model. Although the requirements for the model will only be described in section 5.2.2, certain characteristics are already clear from the figure, namely:

- the required base product
- the commercialisation interface
- the limited customisability of the base product (constraints)
- customisable features
- the prosumers required to participate in the platforming exercise.

The intentions of and the reasons for requirement for these facets will be explained in the following section.

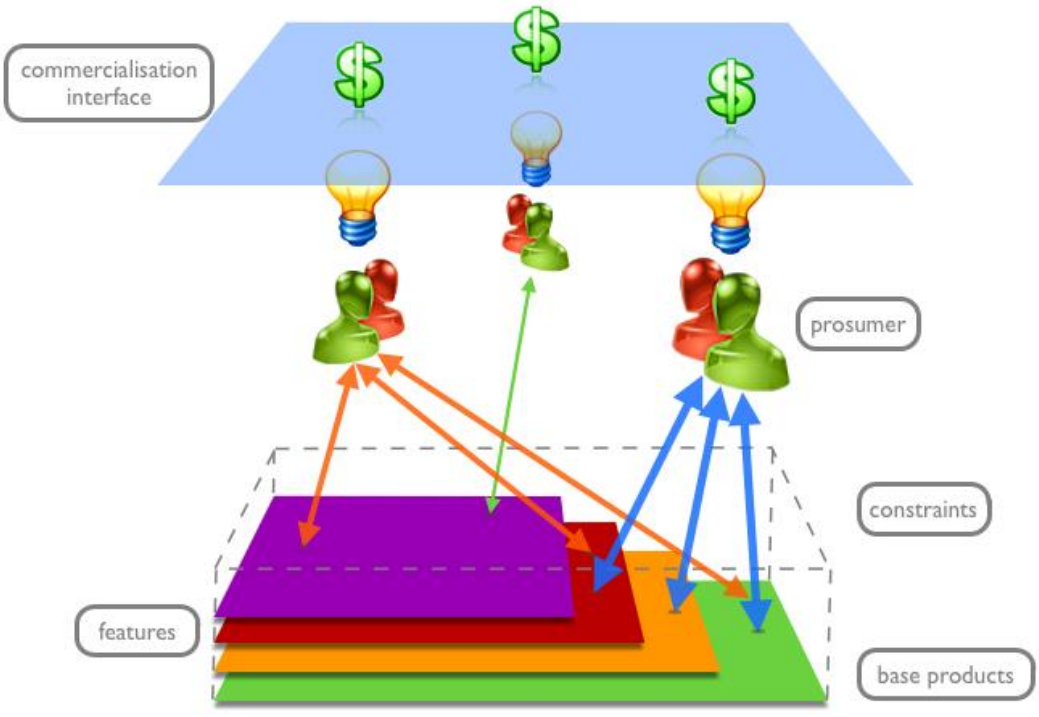


Figure 36 -An illustrative representation of platforming

Piller et al. (2004) states that platforming can also be referred to as user interaction toolkits, configurators, choice boards or design system toolkits. Piller et al. (2004) argue that "user interaction toolkits", as they are called, are the primary method used to reduce costs by relocating certain design tasks to the user, "who can apply their need-related information directly without costly transfers to the producing organisation". Platforming can therefore be assigned to the "Innovation Mall" quadrant (see Figure 35).

5.2.2 The criteria for platforming

As will be the case with most of the OI models and tools, there will be a heavy reliance on technology, more specifically collaborative software enabled by Web 2.0 technologies and the emergence of the social web.

Thus, although it cannot definitely be stated as a criterion for platforming, the dependence on advanced technologies should be clearly assessed. Whether this incorporation of technology will be found in the product/service itself, or in the communication channels through which platforming will occur, it cannot be avoided. It forms the dynamic backbone for platforming to be successful as an OI model.

It is interesting to note that Piller et al. (2004) propose the mobile phone games market as an excellent opportunity for the application of platforming (user design toolkits). This proves that the dynamism needed to successfully deploy the platforming concept is indeed important, as in the case of mobile gaming: the software background provides this dynamic capability.

Piller et al. (2004) state that a platform (toolkit) must have the following characteristics:

- *User-friendly operation* – easy to operate, intuitively structured
- *Libraries* – basic functionality from which customisations can be built
- *"Trial and error"* – the capability to do iterative designs, and iterative design testing
- *Solution space* – a defined solution space that provides room for creative user creations.

These proposed characteristics will be included in the development of the proposed organisation criteria for platforming, which are as follows:

- **Base product/service/brand**

  A base product, service or brand is the primary requirement for the platforming model to be able to function. It is on this foundation that the prosumer additions and alterations will be built.

- **The base product/service must be accessible and customisable**

  Various features and facets of the product or service must be accessible for the prosumer to customise and use. The level of difficulty associated with accessing these features/facets

should be minimised. The reasoning is that barriers to contribution should be minimised to promote prosumer involvement and usage of the base product or service features.

The product/service should thus be designed in such a way that features and facets, which would have been unreachable in a closed innovation product, can now be accessed and customised.

The basic product libraries suggested by Piller et al. (2004) should be incorporated, and made accessible and customisable.

- **Collaborative communication channels**

  A well-suited and effective communications and collaboration medium must be employed or established to foster co-development between the organisation and the prosumer, as well as on an inter-prosumer level.

  This communication medium must enable prosumers to share platform developments and alterations made to the base product or service.

- **Infrastructure and manpower to support facilitation**

  The correct infrastructure and prolonged employee involvement is a necessity and just as important as the abovementioned communication channels to support the facilitation process.

- **Willing participatory prosumers**

  A base of loyal prosumers is a necessity to allow the product or service to be exploited as a platform. As was mentioned before, the value received from mass collaboration is directly related to the number of participants.

- **The product/service must be well marketed**

  The innovations gained from this model will only be maximised if the maximum number of prosumers is participating in the exercise. This can only be achieved by offering a product/ service that the prosumers need and/or want, and by effectively marketing the platform product in such a way as to meet that need and/or want.

  Proper market research is thus needed to ensure that the product/service that the organisation is considering as a platform will be accepted and used by the prosumer base.

- **Incentive reward scheme for prosumers**

  To maximise the involvement of prosumer contributions, an incentive scheme should be put in place. The type of reward should be relevant to the industry or line of products.

Forte and Bruckman (2005) suggest that contributions towards an Open Innovation service or product should be rewarded based on the same principles as those on which scientific contributions are awarded: crediting and respect from fellow contributors.

Thus, the emphasis should not be exclusively on financial rewards, but an incentive scheme fitting to the specific product, service or product range should be available.

- **The limits of customisability**

  The extent to which the product/service is customisable should be limited in such a way that platform extensions can only be promoted and financially exploited through the organisation offering the platform.

  This hierarchical control is a necessity to ensure that the organisation gains value from the exercise.

- **The attractiveness to prosumers**

  It should be evaluated whether the specific product is relevant, and if it would attract enough prosumer attention to actually convince the prosumers to become involved in the customisation of the product. This exercise should minimise the risk of launching an “empty” product, and then not receiving any prosumer input.

5.2.3 The advantages and disadvantages of platforming

Advantages

The concept of platforming may not be applicable to all industries or applications of innovation process management. In view of the criteria stated above, it is therefore important to have a good understanding of the advantages and disadvantages of platforming.

The beauty of this OI model lies in its intended goal – to give the designing capabilities to the person who will be using the product/service, and to provide this person with an innovator sandbox to customise and create a product that they not only need, but want.

Instead of the organisation guessing what capabilities and features the product/service should have, *choice of preference is given to the end-user him- or herself*.

By providing this prosumer playground, and also the channel for commercialisation, the organisation will receive financial income many times greater than the cost of facilitating the platform innovation space. Thus, if correctly deployed, managed and marketed, platforming can *offer an excellent return on investment*.

As was the case in the Apple iPhone example mentioned in section 4.4.2.1 (ii), by opening up the innovation process, the organisation is effectively increasing the number of contributing designers while maintaining a minimal impact on the cost of the project.

Since effective marketing is indispensable to ensure maximum prosumer involvement in the process, this effort on the marketing front will have a *positive impact on the brand* and, if successful, create brand equity.

As is currently the case with the iPhone, the amount of brand equity created from the successful marketing, launch and sustained hype created around this product has resulted in *other large organisations pursuing the goal of maximising their businesses on the brand value of the iPhone*.

An example is Google's launch of Google Street View, a variation of their already successful Google Maps, for the iPhone in September 2008. This application gives immense capabilities to the device, but Apple's role in it was minimal.

The financial gains and the brand value created from this collaboration prove to be beneficial to both organisations involved – something that would have been impossible to achieve in the Closed Innovation era.

Disadvantages

As is the case with any new venture or exercise, the positive effects have to be evaluated along with the negative consequences. This also applies to the OI concept of platforming.

The nature of platforming entails *extended employee immersion and prolonged involvement*. The product/service offered is at its core a living project, as opposed to a project that is terminated after the design and launch of the product/service. This extended participation of the organisation's workforce will thus result in extra financial and manpower expenditure.

The opening up of the inner workings of a product/service, which is needed to allow for full prosumer creativity and customisation, carries a *risk of laying bare Intellectual Property* not intended to be shared.

It is therefore of the utmost importance to design the product/service with the intent to share, but to *share with caution* – without revealing the elements that provide the organisation with its competitive advantage.

Prosumer activity and involvement determine the success of a platform product or service. What is also of importance is the *level of familiarity that the prosumer base has with the product*.

Although this is not crucial, a prosumer is more likely to contribute to a product/service with which he or she is familiar.

Therefore there are *risks associated with launching a product* with platforming capabilities and then not receiving any prosumer contribution because of *lack of expertise or interest from the prosumer's side*. A proper evaluation should be done to determine whether a product/service is fit to be launched and would be a lucrative proposition for prosumers wanting to get involved in customisation.

The current industry examples of platforming all have their platforming roots deeply grounded in the software capabilities of the product. These examples show that the rigidity of the boundaries of customisation is formed by the limitations of the hardware used in the products. The customisability is introduced in the provision of software.

This may prove to be the greatest disadvantage of incorporating platforming as an OI model. The apparent reliance of platforming on the dynamism of software will limit the use thereof to electronic devices, or services presented through the internet.

5.3 The development of idea competitions as an OI model

5.3.1 Defining idea competitions

The concept of exploiting idea competitions as an OI model was first introduced in section 4.4.2.3. The following definition has been created to better describe this new real-world phenomenon:

> *An idea competition is the technique of adapting an idea suggestion system to be more competitive by rewarding successful submissions (from inside or outside the organisation) financially, or in other forms related to the organisation.*

Referring to the collaboration framework (refer to Figure 35), an idea competition needs to have a form of hierarchical governance, since the hosting organisation needs to maintain control of the competition. The level of participation is dependent on the specific instance of the idea competition, and the level of openness is directly related to various factors within the organisation, i.e.:

- the level of sensitivity of proprietary information
- the purpose of the competition, and
- is the business unit/venture/product/service/segment fit for an idea competition?

These questions will determine the level of participatory openness. Therefore, an idea competition can either be assigned to the “Innovation Mall”, or the “Elite Circle” quadrant.

5.3.2 The criteria for idea competitions

The goal of an idea competition is to attract fresh thinking through increased quantities of ideas, with effective marketing to provide creative entries to problems encountered by the organisation.

The key here is to attract as wide an audience as possible to maximise the wide array of creativity. This will only be achieved if the competition is effectively marketed as a vibrant, inviting opportunity for contestants to be rewarded in a manner fitting to the specific competition or its intended market segment.

Following is a breakdown of the high-level criteria that would have to be met if an idea competition is to succeed as an OI model.

- **Creative stimulative competitions**

  As mentioned before, the goal is to attract fresh thinking to an organisation. As this will require individual creativity, the nature of the particular competition quest should entice the entrants to be creatively or analytically challenged.

- **Capabilities to assess entries**

Creating a competition is only the first part of the process. The assessment of the entries is another crucial facet. It is important to identify a winning submission and to be able obtain useful innovative suggestions from the entries.

Therefore, a base of expertise will be needed to be able to scan, filter and identify useful information. This base should consist of individuals or groups of people who are well educated within the specific field.

It is suggested by Piller and Ogawa (2006) that the prosumers should also be involved in the evaluation of entries.

- **Incentive scheme for entrants**

  A well-developed incentive scheme needs to be developed and introduced together with the competition.

  The type of incentive should be fitting to the competition or industry for which the competition is launched, because there is once again a need to attract individuals with some level of expertise or fascination with the topic to the competition. Therefore, by rewarding the entrants in a way that is lucrative to the specific industry will lure better suggestions or possible solutions.

  These non-financial incentives can be any of the following (Pisano & Verganti, 2008):

  - Recognition and increased visibility in the workplace
  - Increased reputation in a peer group, or
  - Psychological self-fulfilment.

- **Prosumers familiar with the product/service/brand**

  Although it is not a necessity, having prosumers that are familiar with and knowledgeable about the product, service or brand can provide a substantial advantage. The advantage hereof is twofold:

  - Whilst being well educated in or about the specific sector/technology/product, they will not only offer valuable customisations, but will *want* to do so and participate in the improvement of the specific product.

  - Piller and Franke (2003) suggest that well-informed prosumers should be incorporated into both ends of the idea competition – idea submissions, as well as at the review and selection end. They are the best people to evaluate entries, because the evaluation criteria will be based on a buyer/user's perspective.

Since this perspective provides the grounds for the evaluation process, and the prosumers are the end-customers, including them in the evaluation process will be beneficial if it is appropriate for the specific competition.

This is the main reason for the success of the Threadless business model (described in section 4.4.2.3 (ii), as well as the reason for the reduced risk of launching potentially unwanted products.

According to Piller et al. (2003), this reduction in risk can be attributed to the fact that the products being sold are what the clients want, since their collective opinion put it into production in the first place.

This means that no effort is wasted in designing a product that will not sell, as the decision to advance any design into production is made by the customers who initially voted to get the product into production.

- **Well-defined Intellectual Property Rights**

One aspect that all the researched industry examples have in common is that once an entry is made by a prosumer, that prosumer gives up the right to that specific idea or concept. This idea is thereafter the property of the hosting organisation, which then owns the right to use, customise and exploit this submission at its own discretion.

An idea competition as a tool is primarily based on the collaboration and sharing of Intellectual Property. Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images and designs used in commerce.

The prosumer thus gives up ownership of his or her Intellectual Property in return for the possibility of receiving a reward in the form of some or other incentive.

As is the case found in the real-world examples that were researched, these legalities are often communicated through the hosting organisation's Terms & Conditions document located on their websites.

It is also interesting to note that the Terms & Conditions of all the researched examples include a clause (to which the entrant must comply) on the originality of the submitted idea or solution. An entrant is therefore not allowed to enter, as a proposed solution, any idea that is not his or her own work.

This is to protect the hosting organisation from infringing on a protected or patented idea of which they are not aware.

It is thus the responsibility of the organisation to ensure that these Terms of Agreement are well communicated, and agreed upon by all parties concerned. In other words, the prosumer

should be aware that by entering the competition, he or she is running the risk of sharing Intellectual Property without gaining any form of compensation for it.

- **The competition should be well marketed**
  The probability of the success of an idea competition is directly related to the number of entries received for it. This will only be achieved if the competition is well marketed. “Success is therefore in numbers.”

5.3.3 The advantages and disadvantages of idea competitions

Most of the advantages and disadvantages mentioned below are derived from a logical evaluation of real-world idea competitions that were researched.

Trends

Based on this research, the following trends were defined for idea competitions:

- **Idea competitions are primarily aimed at the Millennial Generation**

  Generation Y (the Millennial Generation) is the computer-literate, internet-knowledgeable, connected target market who started the tendency to act as an individual, and to press their individual tastes on the consumer market.

  This is the result of the micro-customised world that this generation has become used to.

  Also, it is this acceptance of interconnectivity, self-creation and individual creativity that is needed for an idea competition to be successful.

- **Modern, “pop culture” brands or organisations benefit the most**

  Since these competitions are targeted at Generation Y, the brands and organisations that have benefited and will benefit the most from these types of competitions are brands to which the target market can relate and has experiences with.

  All researched instances relate to a business-to-consumer (B2C) environment.

  The researched real-world examples include:

  - Starbucks (mystarbucksidea.com)
  - Hugo Cologne (hugocreate.com)
  - Puma Create
  - Nike
  - Carrol Boyes (metal.carrolboyes.co.za)
  - Peugeot Concurs Design Competition

All the abovementioned examples are brands that have a strong presence and perceived value in the Generation Y target market. It is thus more attractive, and plainly exciting, to the Generation Y prosumer to contribute towards a brand for which he or she has brand preference.

As an example, Figure 37 shows four websites dedicated to idea competitions. Three of these examples are managed by the organising organisation, while the other (bottom left, Crowdspring) is a website dedicated to the hosting of idea competitions for other organisations. The self-hosted idea competitions are all popular brands (especially among the Millennial Generation).

Note that Hugo Create is hosted by Hugo Boss, the German fashion house, which is a subsidiary of Procter & Gamble, the consumer goods giant more than often credited with being an Open Innovation leader with their Connect and Develop programme (Procter & Gamble, 2007).

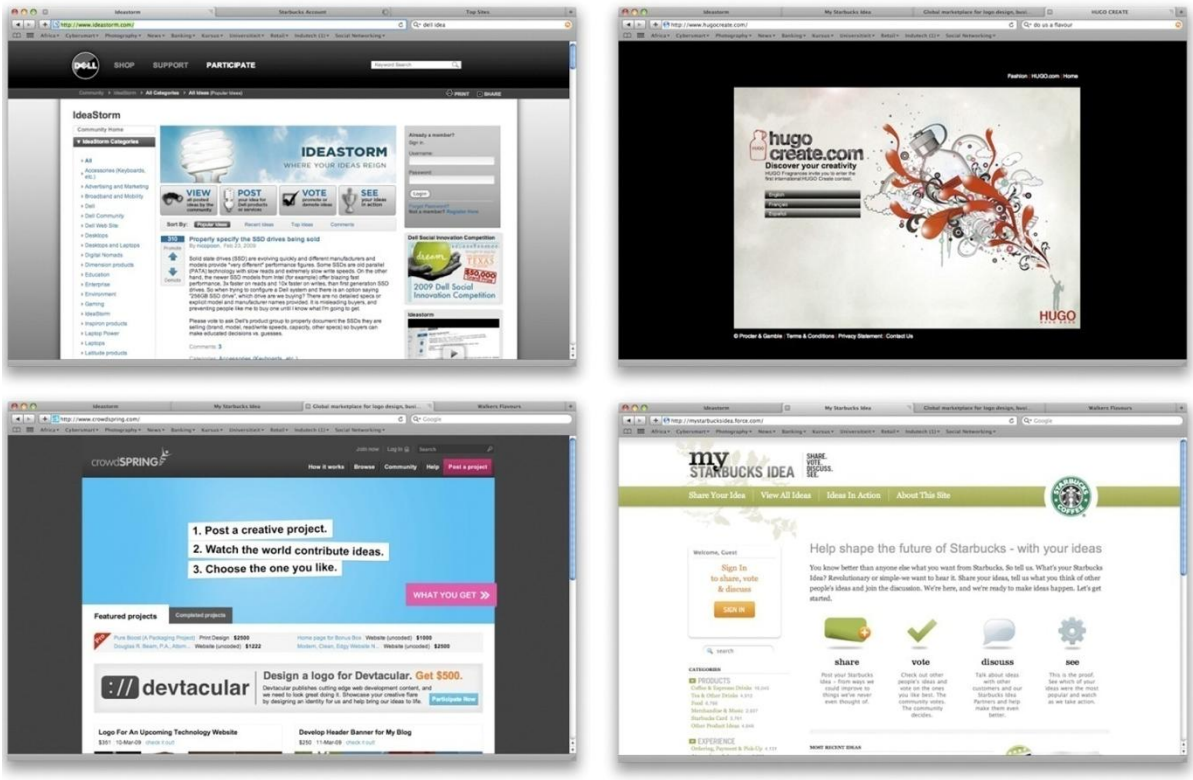


Figure 37 - Examples of idea competition websites

(clockwise from top left: Dell IdeaStorm, Hugo Create, Crowdspring, MyStarbucksIdea)

Advantages

The greatest advantage of idea competitions is the *quantity of ideas* that can be accumulated through a relatively inexpensive method. An idea competition thus is an excellent source for cheap ideas, in the opinion of Pisano & Verganti (2008).

Related to the increase in quantity of ideas gained via idea competitions is the level of fresh thinking experienced.

An idea competition also provides a *safety barrier against the possibility of suffering from groupthink*. As the sources for the various ideas originate from unrelated individuals, the possibility of groupthink is minimised.

The number of entries received (and hence the variety of entries and probable success of the competition) is in *direct relation to the effort put into the marketing of the competition*.

Another advantage of idea-competitions is the *increased brand awareness* resulting from the marketing effort made for the idea competition. The brand awareness is increased primarily on two levels:

- **Organisational marketing**
  The physical marketing effort from the hosting organisation (web, print, radio, television, etc.).

- **Viral and word-of-mouth marketing**

  Since the inclusion of, and the contribution by prosumers form the essence of an idea competition, word-of-mouth communication by the prosumers forms a spontaneous form of marketing which will increase the benefit to the organisation. Viral marketing refers to marketing techniques that use social networks to produce marketing benefits such as increased brand awareness through self-replicating viral processes, analogous to the spread of computer viruses.

As proof of this, Doritos (the tortilla snack company, owned by Frito-Lay) hosted a speculative-type idea competition where prosumers could create and enter a fully developed television advertisement to be shown during the 2009 American Super Bowl final. The winning advertisement would receive $1 million (Doritos, 2009).

It is estimated by ComScore (2009), an internationally acclaimed internet-marketing research organisation, that Doritos registered the highest brand improvement score in ComScore's 2009 Super Bowl survey. This serves as proof that idea competitions, if deployed correctly, have the potential to increase the brand awareness of an organisation.

Disadvantages

The greatest disadvantage of incorporating or deploying an idea competition lies in the *increased usage of the hosting organisation's resources*. This includes manpower and information and communication technologies (ICT). Although the role of ICT will be supportive of the actual employees busy with the idea competition, all resources will be occupied to support the facilitation process – whether to support the prosumer contribution process, or the evaluation of the entries.

Another area that may prove to be of immense importance, and complex to achieve and manage, is the *correct set-up and management of Intellectual Property Rights (IPRs)*. Various key issues can be identified regarding the IPRs of an idea competition.

The difficulty of the set-up and control of the IPRs is essentially in the clarification of the ownership of any Intellectual Property shared between all parties involved.

The hosting organisation has to retain the ownership of all submitted ideas, solutions, suggestions and inventions to be able to exploit and commercialise the opportunity in its entirety. This right should be clearly stated (in writing) in the Terms and Conditions to which the contestant agrees.

Another disadvantage realising from hosting an idea competition is the *infrastructure that needs to be in place to be able to host and evaluate the competition*. This issue is primarily concerned with the ICT infrastructure mentioned earlier. Since these idea competitions are best communicated through the internet, having a proper, user-friendly website with socialising Web 2.0 technologies incorporated, is very important to ensure the success of such a competition. The greatest problem is that these competitions are rarely held on a continual basis – thus to take on this financial expenditure to eventually be used for a small fraction of the time may seem unnecessary despite the potential innovative gains thereof.

Luckily, this need for added infrastructure and competition facilitation and management has created a new opportunity for other organisations to specialise in acting as third-party management firms of idea competitions.

Various examples hereof are found on the internet, two of which are:

- **IdeaCrossing** (www.ideacrossing.com), a US-based firm specialising in idea competition management. Their clients include Hilton Hotels, American Express, Harley-Davidson, Whirlpool, General Electric, Shell, Lexmark and Red Hat (IdeaCrossing, 2007).

- **Idea Bounty** (www.ideabounty.com), a South-African based (Cape Town) organisation specialising in idea competition management, with a clear emphasis on attracting contributions from the Millennial Generation. An interview held with the organisation is described in section 4.4.2.3 (iii)

These organisations take on the responsibility of all aspects of an idea competition. These include the planning, marketing, idea gathering, idea filtering as well as the eventual presentation of rewards.

The greatest advantage of making use of an established service, such as IdeaCrossing or Idea Bounty, is the level to which their community is already established, as opposed to the organisation first having to establish the crucially important community before the competition can commence.

5.4 The development of customer immersion as an OI model

5.4.1 Defining customer immersion

The research presented in Chapter 4 assisted in the development of the following definition to better describe what the customer immersion OI model entails:

> *Customer immersion is a technique whereby customers' inputs as to product requirements and expectations are exploited through intense customer interaction and the involvement of employees in, and their study of, the customer-product interaction process, with the assistance of new technologies.*

It is important to note that customer immersion is orientated more towards the end of the product development life cycle, because customer input and customer-product interaction are more valuable during prototyping and design iterations.

However, this does not mean that customer immersion cannot be used earlier in the product development life cycle to identify a need or want for a new product or service.

Customer immersion can in many cases be seen as an adaption from focus groups. This alternative to focus groups is warmly welcomed given the poor success rate of focus-group approved products, as explained section 4.4.2.2 and mentioned by Zaltman (2003).

Following is a quote from a recent *McKinsey Quarterly* article:

> *The Internet and new social-networking technologies are allowing companies and their customers to interact with unprecedented levels of richness. Some leading organisations are using this opportunity to draw customers into the heart of the product development process. (Bughin, Chui, & Johnson, 2008).*

These technologies foster open communication and thus promote customer input as to the likes, dislikes, needs and wants with regard to a specific prototype or a new product.

Referring to Figure 35, customer immersion as an OI model will fit into either the “Innovation Mall” or the “Elite Circle” quadrant, because in any instance a form of hierarchical governance will be present if customer immersion is used.

The level of openness will vary for every instance of the model’s application. An organisation may choose to identify a number of potential customers or lead-users or, if fitting, host an entirely open immersion programme.

Customer immersion will therefore have hierarchical control, but can differ in levels of participation.

5.4.2 The criteria for customer immersion

The goal of employing the customer immersion model is to gain insight into the users' requirements, likes and dislikes concerning a specific product, and to gain an understanding of how the user experiences the product or service while the project is still in the prototyping phase.

This will prove invaluable to minimise the risks associated with product launching.

As with any other tool that can be used to increase the likelihood of successful launching, certain criteria and measurements need to be in place for it to function optimally.

- **Minimise barriers to communication between designers and customers**

  The decrease in the impediments to open communication will increase the likelihood of constructive contributions from the user base.

  By setting up the communication designing or controlling body from the organisation's side to communicate as directly as possible with the participating customers will reduce the possibility of losing important customer insights.

- **Sensible selection of contributing prosumers**

  In the case of a controlled, hierarchical customer immersion process (Elite Circle – see Figure 35), care should be taken during the selection of prosumers who will participate in the process.

  The selection of prosumers should include as broad and as accurate a representation of the intended target market as possible.

  In the case of a totally open customer immersion model ("Innovation Mall", see Figure 35), the criteria to which participants should comply before their contributions are considered should be clearly defined.

- **A well-defined or tangible prototype eases the process**

  It is recommended that a prototype be provided that is as tangible as possible. As is argued by Ulwick (2002), customers are often (especially in a focus-group environment) asked to hypothesise about unrealistic, intangible products or services.

  If the organisation were to provide a more realistic, semi-functioning prototype with which the contributors could interact, they will develop a better understanding of the intended product. Also, the designers will be able to gain a better idea of the manner in which the customers experience their products.

- **Continuous contributor engagement fosters participation**

  Organisations should keep their user base engaged to create an environment where contributors can feel free to contribute or give their honest opinion about a potential product.

  This can be achieved, especially in an online service environment, by creating an exciting and enticing offering – whether this is the service itself, or the method in which its design is orchestrated.

- **The offering has to be simple and easily understandable**

  The offering needs to be fully understood by the participating contributors because they have to use the product or service to enable the organisation to form an understanding of the customer-product interaction.

  There is no use in contributors interacting and giving recommendations about a product if they don't fully grasp its concept or purpose. Therefore, this OI tool is better intended for commercial and retail products or services, or iterations of products/services the contributors can relate to.

5.4.3 The advantages and disadvantages of customer immersion

Customer immersion will in many instances only be relevant and of use to a niche market because of the requirement that it should be potentially successful.

However, it is still important for an organisation that considers deploying this tool as part of its innovation process, to understand the advantages and disadvantages of involving and immersing customers in the innovation process.

Advantages

Customer immersion certainly holds many advantages, with the most rewarding being the fact that *product recommendations are received from the end-customers who will be using it*.

This level of customer insight and exploration of customer-product interaction is immensely valuable. The organisation therefore creates the opportunity to allow its customers and consumers to provide innovative suggestions and new product alterations.

Another advantage customer immersion offers is the *increased potential for earlier defect and error detection*. This is especially valuable in the case of products or services delivered through the internet. In this manner, a service can be kept in the so-called "beta release state" while it is being publicly adopted. This is the case with Google's webmail service, Gmail, which since its launch on

1 April 2004, remained in beta until 7 July 2009, with the service being publicly adopted even though it was still in a beta testing phase.

Therefore, this service was publicly available for use while the organisation (Google) still held the right to alter code or correct errors. Google defended this continued beta state by saying that this permanent state of continuous improvement was for the ultimate benefit of the product. The identification of these errors would not have been so effective were it not for the immense user base that uses the service on a daily basis (Buvat, Mehra, Rao, & Braunschvig, 2007).

In the case of Gmail (as well as various other internet-based service offerings), the service is made publicly available as quickly as possible (thus saving the organisation time and money), even though it has not yet been through thorough quality checks. The responsibility of this part of the product development life cycle is given to the contributing users.

This exercise saves the organisation valuable resources, while creating a certain *level of awareness for the product/service*. This also benefits the organisation/service even before the product/service is launched in its final form.

The involvement of customers earlier in the design process can have a definite impact on *the length of the different product design life cycles*. The inclusion of customers earlier in the design phase makes it difficult to distinguish between the end of the design phase and the official beginning of the introduction stage. Although this distinction may only be important from an academic and theoretical point of view, what is more important is the earlier introduction and commencement of a product/service that can generate value for the organisation earlier.

In the case of such a product/service being made commercially available while customer immersion is continuously incorporated to improve the product, this initial stream of revenue will be welcome to cover project expenses and to reach the breakeven point (income versus expenses) at an earlier stage. This is graphically depicted in Figure 39.

This is what is happening with the development of Google's Wave Project. Although the project was already announced publicly on 28 May 2009, it was only launched as a commercial service in late 2009. Programmers (and bug-testers) were invited at the time of announcement to become part of the Wave development team. These individuals will then be involved in the further development of the project, until it has reached an agreed-upon level of quality.

Figure 38 graphically depicts the Google Wave project's timeline.

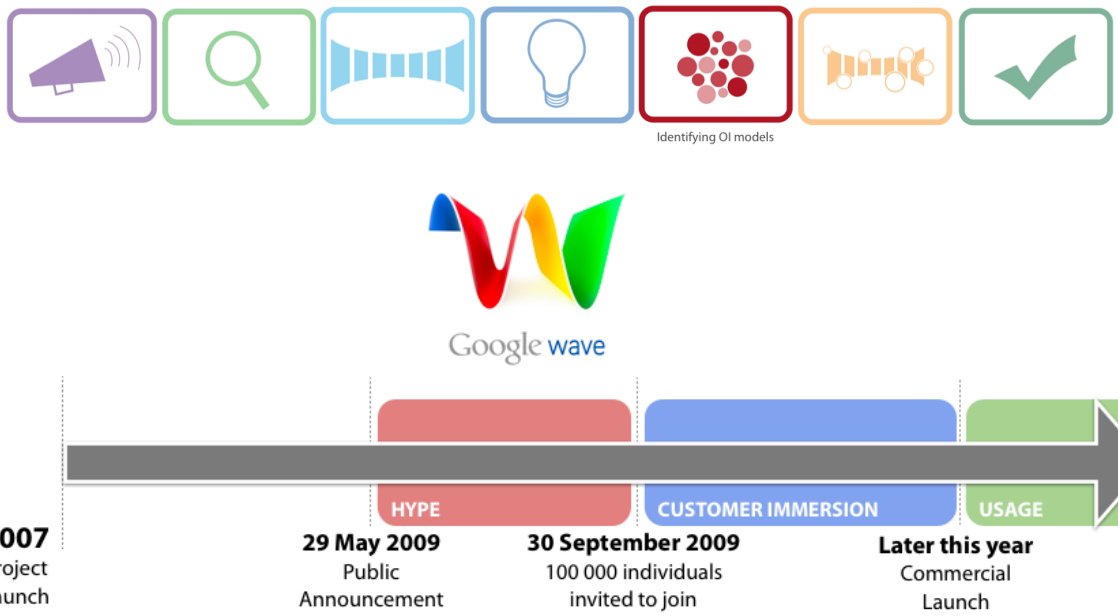


Figure 38 - The Google Wave project timeline

The involvement of the public in this project has created increased awareness for the product, although only 100 000 people can currently use it. This immense marketing exposure will contribute towards the product being adopted earlier by the broader public, resulting in revenue being created from it at an earlier stage, and the earlier profitability of the product.

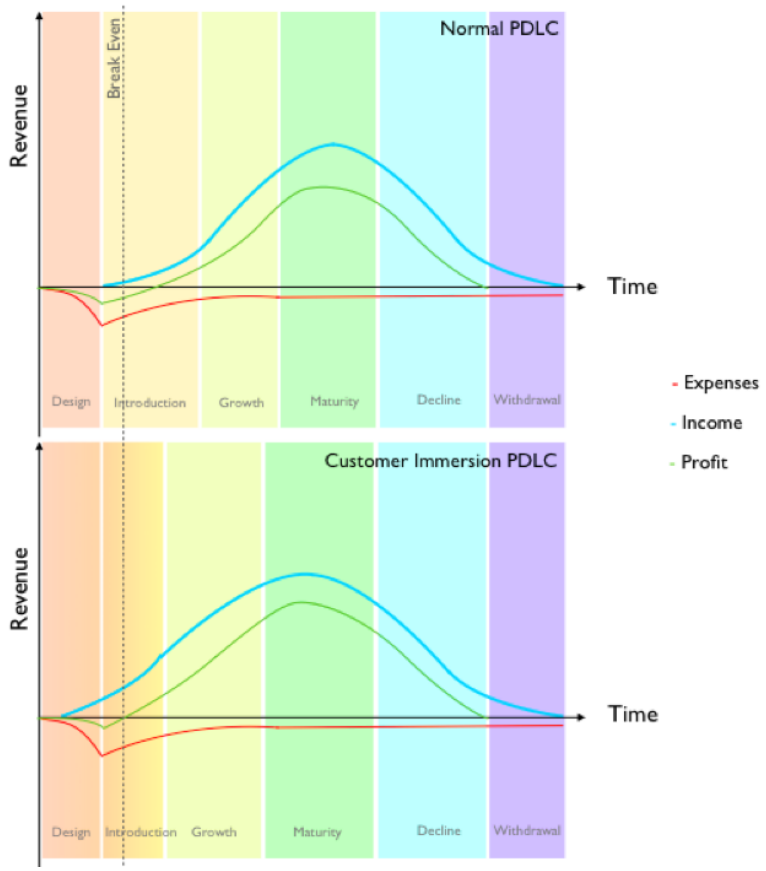


Figure 39 - PDLC with customer immersion

These proposed advantages will not come without a compromise for the organisation. It is exactly in this instance that the organisation needs to evaluate whether the benefits outweigh the drawbacks of this model.

Exploiting customer immersion as an OI model will *require additional resource allocation and usage*. These resources can include:

- **Workforce resources**

  Customer-product interaction needs to be studied, which can consume additional (and valuable) employee work hours. A positive, open environment needs to be created through which employee-prosumer relationships can improve the possibility of users actually contributing to the project (in the case of an Innovation Community – see Figure 35)

- **Physical infrastructure**

  In the case of using customer immersion for a tangible product, a physical location needs to be set up in which the customer-product interaction can be studied.

The inclusion of customer immersion as an OI tool can be an *expensive exercise*. This is especially the case when one considers the added expenses involved in creating the facilitation environment needed for customer immersion to succeed. Added to this, the iterative nature to which this model lends itself can also be a costly exercise.

As was mentioned previously, customer immersion is more orientated towards the prototyping phase of new product development. Therefore the intended *product/service has to have been made tangible in some or other form for the prosumer to gain an appreciation and understanding of it*.

This introduces the *risk of laying bare exclusive information*, which is not yet intended for public sharing. This openness creates an opportunity for competitors to copy the proposed design or service. This risk can be managed in two ways:

- **Well-designed sharing and openness limits**
  The organisation only opens a certain part of the product for customer immersion and thus minimises the chances for competitors to fathom the whole extent of the product or service.

- **Careful selection of participating prosumers**
  By introducing only trustworthy prosumers to participate in the exercise minimises the risk of sharing proprietary knowledge, but also introduces the risk of not having an evenly balanced representation of the intended target market.

Although the suggestions made by lead-users are often the most innovative, as was argued in section 4.4.1, the organisation needs to ensure that the lead-users constitute a true representation of the intended target market. This will ensure that the “general target market” and not only the lead-user

group will welcome product alterations, as these lead-users more often than not have a strong preference for technologically advanced and technological products, which will not appeal to the “general target market”.

Customer immersion *appeals more to a business-to-consumer (B2C) environment* than a business-to-business (B2B) environment. The reason for this is that, in a business-to-business environment, the product is already made-to-order as the client requested it. It can therefore only be achieved in the mass-consumer realm.

5.5 The development of collaborative product design and development as an OI model

5.5.1 Defining collaborative product design and development

The development of the following definition is based on the research presented in Chapter 4. This serves as an introductory definition of the OI model that will be elaborated in the following sections.

> *Collaborative product design and development is the technique of increasing the importance and responsibility of suppliers and customers in the product design process and supply chain to result in increased productivity to the benefit of the organisation, and eventually the customer.*

This process mainly entails outsourcing the detail design and development of product segments to different parties in the supply chain. Widespread supply chains are not a new concept to business, but the alternative twist it is given in the Open Innovation environment certainly requires a new way of thinking.

The level of detail design required by collaborative product design and development (CPDD) demands the commitment of, and absolute openness between all the parties involved (suppliers and consumers) to minimise the risk of project failure.

Whereas in the normal flow of events an organisation would be continuously scanning for market pull and technology push, with the product and value-addition flowing from supplier to customer, the Open Innovation process adds additional dimensions to the flow of a supply chain.

In the OI context, collaboration takes place in all directions: supplier to organisation, and customer to organisation (see Figure 40). Certain aspects of the final product can therefore be designed and delivered by parties other than the organisation itself, as was the case in the Boeing example presented in section 4.4.3.1. Although the product flow still is from supplier to organisation to customer, the value addition to the final product can be from all parties.

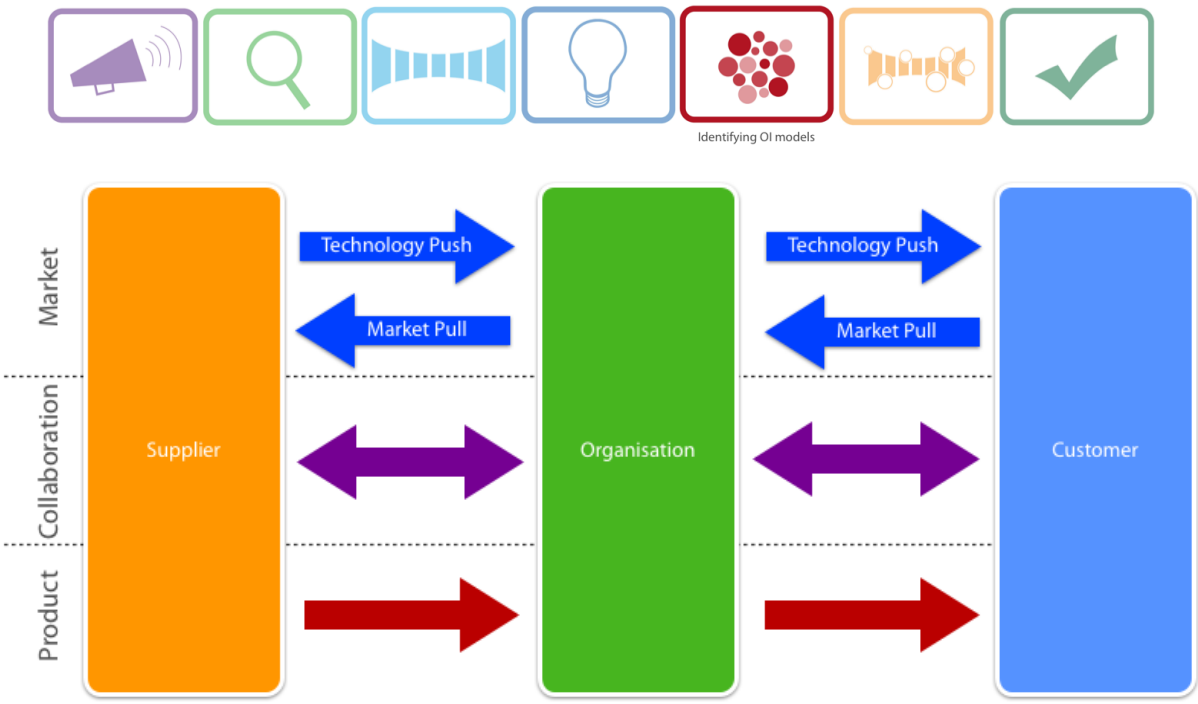


Figure 40 - Collaborative product design and development

The organisation therefore only fulfils the role of mediator and quality assurer – responsibilities that will prove to be of crucial importance. In terms of its role as mediator, the organisation still has the responsibility to ensure that all collaboratively developed parts (or segments) fit together to form the whole.

The responsibility of quality assurance means the organisation has to ensure that the collaborated product still meets the guaranteed quality requirements which all internally developed products have to meet.

It is the responsibility for these aspects that gives the organisation its hierarchical control over the process, and justifies its assumption of a profit-taking position in a collaborative environment.

In a recent survey published by IBM, 36% of CEO respondents stated that they are investing more heavily in serving and incorporating these “more sophisticated” customers. This proves that the concept of incorporating these “prosumers” is a reality that will influence the strategic direction and daily activities of the enterprise of tomorrow (IBM Global Business Services, 2008).

To be able to fully comprehend the requirements for deploying this OI model, a preliminary set of criteria needs to be created based on a realistic understanding of what the model entails. For this reason, Tracks4Africa, a South African organisation with an open business model using collaborative product design and development was contacted and interviewed to better understand the inner workings and requirements for this specific OI model. Collaborative product development can therefore be assigned to either the “Innovation Mall” or the “Innovation Community” quadrant.

5.5.2 An interview with Tracks4Africa

Tracks4Africa (T4A) specialises in developing GPS maps of the African continent for GPS-enabled devices. These maps are sold through their website and customers can then upload them to a GPS device to be used when trekking through the vast African continent.

Although T4A is not the only company that offers GPS maps as a commercial product, they are unique in a specific way. Where other competing organisations rely on existing geographical maps and in-house data collection for building their maps, T4A does not undertake any data collection themselves.

All the data used in creating their content-rich GPS maps are generated by their customer base, the T4A community. Community members upload the data (called breadcrumbs) from their GPS devices to the T4A website, from which T4A then develops their commercial products.

This is an overly simplified description of what the process, and the upkeep of the system, entails. In essence, this complementary collaborative environment only succeeds because of the mutual emotional attachment of all the parties involved in the cause.

The commercially available map products from T4A cover 23 African countries with 550 000 kilometres of fully developed GPS maps. These products are based on a collected 7,5 million kilometres of GPS data – all of which have been submitted by the T4A community.

Although it may seem that T4A is exploiting its users' contributions for its own financial benefit, this is definitely not the case. This mutual agreement was part of T4A's humble beginnings.

What started as a web-based community forum for off-road enthusiasts in 1998 has now turned into a profitable organisation. In the beginning, all community members were on the same governance level (level of authority), sharing any off-road African experiences (and GPS data) with their fellow community members (flat hierarchy, see Figure 35). It was not until a few years ago that T4A obtained the required software to merge and create "routable" routes from these data sets – only then did the hierarchical style change to a governed type of "Innovation Mall".

The process from raw GPS "breadcrumb" data to a commercially feasible product entails an immense amount of work from the T4A staff. As one can assume, quality assurance needs to play an integral role when prosumer involvement is as closely integrated into the final product as is the case with T4A. This obligation to nurture quality data and perform quality data filtering is identified throughout the entire process.

The process from prosumer contribution to final product works as follows (Groenewald, 2009):

1. **Prosumer submits GPS data via e-mail**
    - The prosumer specifies his or her personal details, description of the data as well as the actual data.
    - T4A spot-checks the data.
    - The submission (including accompanying e-mail message) is stored in a secure electronic folder structure.
    - To maintain the highest level of traceability, T4A records as much information as possible from each submission (prosumer details, which area of Africa it relates to and date of submission).
2. **GPS data is added to the vault**
    - T4A imports the specific prosumer's GPS data to the vault – adding another layer to the pre-existing set of GPS routes (data sets).
    - Every imported data set has a relational attribute stipulating the prosumer's details, as well as submission date details to improve traceability.
3. **Digitisation of the singular route**
    - The composite of imported GPS data sets provides the kernel on which the final route will be drawn.
    - Each section of route is drawn manually, based on the combined submissions from all relevant prosumer entries. (Various efforts to automate this process have failed, as the imported GPS data is never "clean" – it contains various maverick data points because of logging errors).

      A lot of open community communication with community members takes place during this phase, e.g. regarding road conditions and road accessibility in certain areas.
    - This digitised singular route set is referred to as the "warehouse".
4. **Compilation process**
    - The warehouse data layer is used to compile the final GPS route package. This will include the actual route layer, as well as geographical (rivers, dams, etc.) and other points of interest (POIs).

- A lot of effort is spent on finalising the route layer, assigning specific colours to specific route sections to indicate the various surfaces and the accessibility of the routes.
- The compiled routes are packaged into an executable format by T4A.

5. Beta testing and quality assurance

- The compiled GPS package is distributed freely to the core T4A community, for quality-testing purposes. These users are then urged to load the beta package onto their GPS devices and through basic usage identify any discrepancies or errors that will be reported back to T4A.
- In-house testing is also done to ensure a certain level of quality and conformance.
- Any reported errors are then rectified by the T4A staff.

6. Packaging and distribution

- The tested beta version is made available as a full commercial product – it can be downloaded from the T4A website, or is available in CD format.

This process is depicted in Figure 41. The importance of the opposing roles played by the community and by T4A are also graphically depicted.

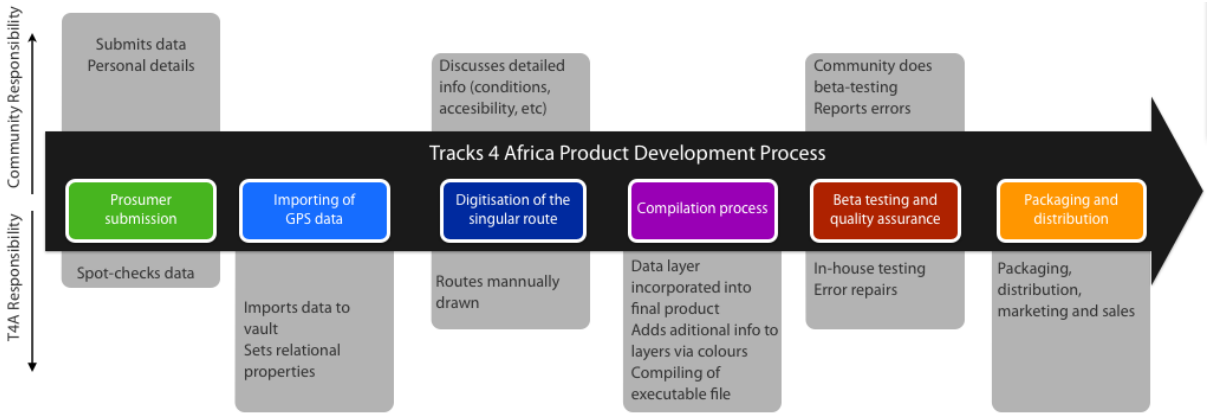


Figure 41 - T4A's product development process

This entire process repeats itself biannually, with commercial releases taking place every year during the months of May and November.

The importance of the iterative design process within each cycle is portrayed by the role the T4A community fulfils in the quality assurance phase. T4A does not have the needed resources available to do all quality assurance testing in-house. Therefore, by using their prosumer base and understanding the requirements of fostering an actively participating community, they can rely on their community to fulfil this important function.

This closer inspection of the entire process reveals why accusations of exploitation against T4A are unfounded. “Crowdsourcing” is often criticised as being the exploitation of cheap labour (see discussion of spec work in section 4.4.2.3 (ii). Tracks4Africa does involve their community in their product development process, but this participation takes place by mutual agreement of all parties concerned and the community is well rewarded for their participation in the form of regularly updated GPS maps.

The immense amount of reworking and effort undertaken by T4A on the raw prosumer contributions show that there is merit in capitalising on crowdsourcing, provided a valid business model is already in place.

5.5.3 The criteria for collaborative product design and development

It is the opinion of the author that the collaborative environment needed for this kind of OI model to work properly could not be attained before the convergence of certain ICT technologies that offer the level of connectedness and computing power available today. Therefore, there will always be a strong reliance on these Web 2.0 ICT tools to provide collaborative power.

Recommendations as to the criteria needed for collaborative product design and development were developed from various case studies, literature as well as the interview with T4A.

- **Well-developed and well-communicated specifications**

  Since the organisation is sharing responsibility for the design and development of the intended product, it is important that all parties concerned are on the same page – specifications page, that is.

  It is the responsibility of the organisation to ensure that the contributors are well briefed, and that they are aware of the specifications and quality levels to which they should comply.

  Allowing outsiders to design and create certain aspects of an organisation’s offering introduces various risks. It is therefore of the utmost importance to create and adhere to strict specifications and quality requirements, otherwise the organisation loses control of these aspects.

- **Well-developed and well-communicated contractual agreements**

  Although this almost goes without saying in any modern-day business agreement, legal contractual agreements are crucial. This is even more important when the supply chain takes on the level of openness proposed by this OI model.

  All parties involved should be clearly informed as to what is required of them, what the delivery dates are and, in the case of suppliers being the contributors, penalty clauses for non-compliance.

If customers become contributors, it is more a case of “hoping for the best” (with regard to penalty clauses), because contractual agreements will focus more on the legalities of sharing Intellectual Property, rather than on non-compliance.

- **An open, communicative environment**

  Since the logistical effort increases with the opening of the supply and contribution chain, open communication is very important.

  This environment needs to be created and fostered, because a collaborative project relies on open communication and working towards a single unified goal.

  The level of openness can be increased by utilising collaborative software and electronic communication systems (instant messaging, forums, etc.) which minimise the barriers to communication.

- **Intellectual Property Rights set up correctly**

  In this collaborative context, information sharing is a necessity. Information in this case can include proprietary design specifications, novel ideas or production techniques.

  It is the responsibility of the organisation to create documentation that discusses each potential individual scenario, with legal or procedural steps for every situation.

  It is also the responsibility of the organisation to communicate these procedures through to all parties involved and to ensure that everybody is aware of the consequences of sharing information.

5.5.4 The advantages and disadvantages of collaborative product development

Advantages

As was the case with all the previously mentioned OI models, collaborative product design and development offers various advantages, but it will also come at a cost. It is therefore important to understand the various risks associated with taking on a new model like this, despite its advantages.

Collaborative product design and development offers the opportunity to *decrease development costs for the organisation*. The reduced effort involved in the detail design of product parts translates into reduced costs for the organisation. This will at least be true for the initial phases – the cost saving will be eradicated by the increased expenditure on quality assurance.

The logical reasoning is that, if each party focuses on the core capabilities and applies their specific knowledge and expertise to deliver a certain aspect or part of the product, it can be delivered cheaper

than if the hosting organisation were to attempt to broaden its capabilities to complete all activities internally.

The same principle applies to *reduction in design time* – by allowing all contributing entities to work concurrently, excessive time wasting can be avoided. This is especially valuable when there is pressure on delivery with regard to time-to-market.

This model also forces the contributing parties to *deliver products of a higher quality*. Instead of contributors only fulfilling orders according to the design instructions they are forced to follow, their input and decisions are given more value, thus enabling them to deliver to the highest of their capabilities. Thus, increasing the contributors' level of responsibility also increases the effort they are willing to put in.

Collaborative product design and development also have possible disadvantages if it were to be implemented in an organisation.

Disadvantages

Ensuring the quality of the product will increase in difficulty as the community's size increases. It is easier to manage the input from a smaller group of participating prosumers than from a large group. This is the case for T4A as well, as the CEO stated that they wished to maintain the size of the community as it currently stands. This influences the scalability of the participation model, although the participating community presents only a small part of the wider audience who will eventually use the product.

This model will especially prove to be arduous when prosumers are involved on an individual level – *the amount of repetitive work in reworking each participant's contribution* can strain resources and be potentially irrelevant.

It is the responsibility of the organisation to determine whether this model would suit the individual needs of the organisation before it is implemented.

There is a very real risk of the organisation not receiving what it requires. The community that contributes towards such a project is under no obligation to provide any input – the organisation is basically asking a favour.

5.6 The development of innovation networks as an OI model

5.6.1 Defining innovation networks

The aforementioned research has culminated in the following definition to describe innovation networks:

> *Innovation networks refer to the technique of incorporating the input from a network of contributors in the form of solutions to identified problems related to the hosting organisation in exchange for a reward in the form of an incentive.*

Innovation networks thus entail the organisation posing a problem it is experiencing in its product development process to a community (network) of prosumers. These prosumers are willing to put their effort into solving the problem, because they would like to win a prize that the organisation offers in the form of an incentive relevant to the industry.

This model differs from the idea competition model in the sense that the problems posed here are more specific, detailed technical problems that need solving. Whereas idea competitions are orientated towards gaining ideas (open-ended type) or solutions (speculative-type) to broad, undefined problems, the innovation network is suited to more specific, well-defined and well-developed (almost analytical) problems, as illustrated in Figure 42.

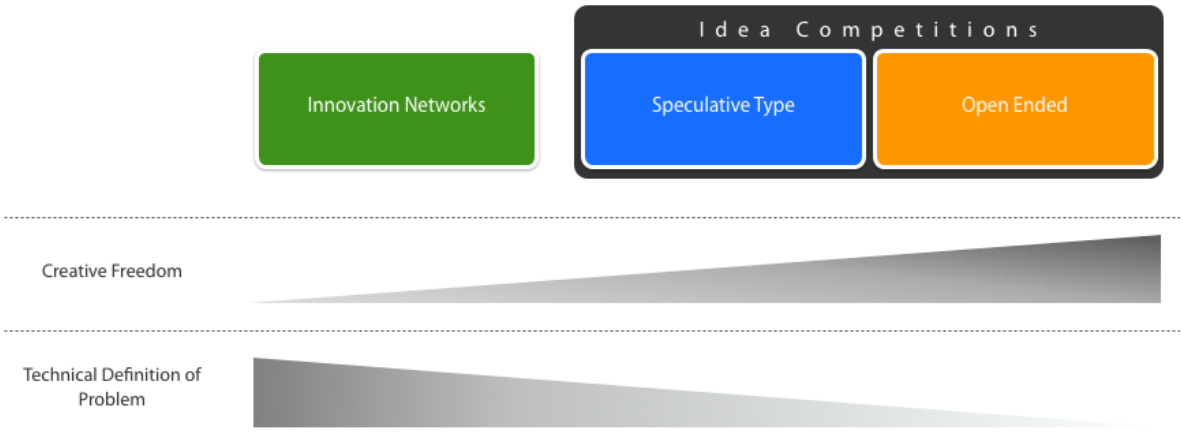


Figure 42 - The differences between innovation networks and idea competitions

If a company were to opt for an existing public innovation network service, various options exist. A selection of these options is depicted in Figure 43. Each of the depicted services has its own intended target market (seekers and solvers – see 4.4.4.2). If the organisation were to make use of the public's services, it should decide on the specific service that would meet their needs.

Figure 43 -Innovation networks

(clockwise from top left: Ninesigma, YourEncore, Innocentive, Yet2.com)

The process associated with these services was discussed in detail in section 4.4.4. In short, it boils down to the following:

1. The organisation posts a technical, well-defined problem to a community.
2. Community members choose whether they want to participate in problem solving.
3. Participating members try to solve the problem.
4. A member proposes a solution.
5. The organisation evaluates solutions, and awards rewards to the most correct (or most relevant solution).

The organisation can choose to create and foster its own community, if it were found that the commercially available services are not fitting to the organisations requirements. Care should however be taken, as the upkeep of these communities requires a sustained effort and can result in increases in resource expenditure. Therefore, making use of existing services could prove to be a better option.

Innovation networks can be assigned to the Innovation Mall quadrant (see Figure 35).

The following criteria were developed to assist organisations with deploying this Open Innovation model.

5.6.2 The criteria for innovation networks

The purpose of the criteria for innovation networks is twofold. On the one hand, the criteria are created to assist the organisation in deploying innovation networks as part of its innovation process; on the other to assist the organisation in choosing between creating its own community or making use of commercially available communities.

As the problem proposals are required to be well defined to ensure that it they are correctly communicated to the community, this model will be more suited towards the later stages of the innovation process. It is only during the more formalised stages (concept definition or detail design) that the technical detail required to sufficiently describe the problem to be posted to the community will be available.

The following criteria were also developed:

- **Organisational capabilities to assess entries**

  The organisation should ensure that it possesses the capabilities to evaluate, filter and assess all the information it would receive via entries from the community. This capability is a necessity irrespective of whether the organisation is using a commercial service or developing its own innovation network.

  This capability refers to the organisational ability to filter valuable knowledge from the masses of information provided by the community. The organisation can potentially gain valuable insights (fresh viewpoints, customer requirements) that serve a greater goal than the mere solution of the proposed problem.

  It is thus very important for the organisation to assign individuals who will be able to correctly filter and accumulate the valuable knowledge from all entries received.

- **Clearly defined policies regarding ownership (and migration of ownership) of Intellectual Property**

  The Terms & Conditions and Copyright clauses of the web-based services researched all clearly stipulate the companies' policy regarding the sharing of Intellectual Property.

  It is generally and jointly understood that users give full ownership of their proposals to the hosting organisation when they submit them. Table 4 presents two examples of the IP-ownership clauses of two web-based idea/problem-solving services:

Table 4 - Examples of innovation network Terms & Conditions

Organisation	Description
Crowdspring	*9. Intellectual Property* *(a) Content License and Access. When you submit content to the Site, you grant us a non-exclusive, worldwide, perpetual, irrevocable, royalty-free sublicenseable and transferable license to use, reproduce, distribute, prepare derivative works of, display and perform the content in connection with the Site, in any media known now or in the future.* http://www.crowdspring.com/user_agreement
Innocentive	*Should you submit information to us via this website (either by offering suggestions via e-mail or participating in various interactive opportunities available on this site from time to time) relating to site content, usability, product suggestions or the like, such information will be considered non-confidential and Innocentive shall have no obligation of any kind with respect to such information, and shall be free to use any ideas, concepts, know-how, or techniques contained in such information without any obligation and, for any purpose, including but not limited to developing, manufacturing, and marketing products incorporating such information.* http://www.innocentive.com/copyright.php

It is not only important to have these IP agreements in place, but also to communicate them effectively to the community to ensure a clear, mutual understanding of the policies regarding this crucial facet of Open Innovation.

- **Clearly defined processes regarding remuneration**

  Community members are willing to contribute towards an innovation network, and forgo the ownership of their Intellectual Property for the possibility of being rewarded for their effort. This forms the core reason as to why the open approach to problem solving is proving successful.

  It is therefore crucial for the organisation to properly describe and develop the reward process.

  Questions the organisation should be asking include:

  - What type of reward will the winning entry receive (financial or otherwise)?
  - Will the prize be awarded in cash, or via a web-based service such as Pay-Pal?
  - What are the regulatory implications in awarding a prize to a community member in a foreign country?
  - Should we deploy a points system where community members can redeem their winnings according to their preference?

- What is a suitable value of the prize for this specific challenge?

The remuneration is the attention-grabbing point to motivate community members to participate in the problem-solving exercises. It is therefore crucial for the organisation to have this segment of the process in place and running free of errors to sustain the motivation of prosumers to take part in the exercise.

- **A well-defined technical problem**

A well-defined technical problem relating to the research and development of a new product or service is a prerequisite for innovation networks. The difference between this Open Innovation model and the idea competition model was depicted in Figure 42.

For the innovation network approach to be successful, the proposed problem needs to be well researched and of a technical nature, fully describing the requirements the community are expected to meet.

It is these requirements that differentiate the model from other idea suggestion-type collaborative environments.

- **An active and attractive community**

As was mentioned with the previous models, an active, open and attractive community promotes participation. It is therefore recommended that the organisation either pursues the creation of such an attractive community, or that the services of an existing community with these characteristics are used.

Prosumers should want to be part of the community. If the organisation can succeed in providing further motivation, other than the intrinsic motivation that spurs on prosumers to participate in the problem-solving exercises they like, so much the better for the entire community.

The community can be made more attractive by clear and direct communication channels between the community members and the organisation. Offering this direct and quick communication between members and the organisational role-players will foster better participation.

5.6.3 The advantages and disadvantages of innovation networks

Advantages

The greatest advantage of exploiting innovation networks relates to the potential *increase in speed* it offers the innovation process. Together with this, the potential *decreases in R&D cost expenditure* may also prove to be beneficial.

Section 4.4.3 illustrated the importance of correctly aligning the R&D networked approach, and how it can increase the speed and reduce the cost of the exercises. The research presented by Lakhani et al. (2007) also reflects the ability of innovation networks to solve problems that were otherwise unsolvable.

Associated with this, as was the case with idea competitions, is the beneficial *customer insight organisations can potentially gain from the evaluation* of entries. Although this insight may not fulfil the immediate requirement of the proposed problem, it can provide valuable information about other problems, new ideas or opportunities for future reference.

Disadvantages

The greatest disadvantage of the innovation network model lies in the *risk of non-performance*. There is no guarantee that the proposed problem will be solved once it is presented to the community. An organisation can thus not solely rely on an innovation network as a guarantee for solving its problems. An innovation network can at most be an additional source organisations can employ to solve problems.

The *limitations of a web-based electronic service*, such as Innocentive, will also have a negative impact on the usability of the model. A web-based service provides the scalability and reach that are needed to gain as much collaboration as possible, although this will require the problem to be presented in, and limited to, an electronic format – a characteristic that will be limiting and disadvantageous to the applicability of the model.

All in all, like the other Open Innovation models, innovation networks will be a strong alternative option when the organisation is busying itself with the innovation process. It will not be applicable to all industries or organisations, but will surely be an option for some.

5.7 Developing the summarised framework

A summarised view of the five different models is given in Appendix A. This appendix serves as a printable handout that organisations can use as a simplified summary of the different options.

The following table summarises each model, with the most relevant focus and offering of each with regard to Open Innovation:

Table 5 - Summary of OI model offerings

Open Innovation Model	Primary offering
Platforming	**Extending reach** and offering of existing product
Idea competitions	**Idea gathering**, and gaining **customer insight**
Customer immersion	Product **testing**, customer **feedback**, product **refinement**
Collaborative product design and development	**Outsourcing** product **development**, **increasing speed** of development and lessening **cost** of development
Innovation networks	**Problem solving** (R&D-related), increasing speed of R&D

5.8 Chapter summary

The focus of this chapter was to further clarify the specifications and requirements for the five identified Open Innovation models.

Each model was individually defined and described, whereafter criteria were developed for each one. Although these criteria are in no way intended to fully describe the installation of the models, they serve as guidelines to put the initial processes in place and help the organisation to decide whether to implement these models, which specific model should be implemented, and how to go about it.

The output from this chapter is presented in Appendix A. The appendix consists of a summary describing each model, as well as the criteria – all in a simplified, summarised version that can be used as an informative handout.

The purpose of the chapter was thus twofold:

- Develop the models and the criteria to assist the implementation of each model within the organisation.
- Identify through these actions the primary offering (focus area) of each model to assist with the placement of the models, which will be done in the following chapter.

6 the allocation of open innovation models to assist the Fugle process

The focus of this chapter is the allocation of the Open Innovation models that were identified in the previous chapter to each stage of the Fugle Process Innovation Model, solidifying the gradual evolution of innovation models as was initially depicted in Figure 6.

Throughout this research, the investigation of Open Innovation has steadily progressed to the point where a set of implementable models was developed. The final, remaining task is to allocate the developed models to the traditional innovation process (the Fugle model) that was discussed in Chapter 3.

This allocation is done by matching the focus of each Fugle stage with the primary offering of each Open Innovation model.

6.1 Allocating the OI models to the Fugle stages

The summary below in Figure 44 is based on Table 1, which depicted the primary focus of each Fugle stage, as well as the requirements for each stage that may prove to be relevant to the allocation of the Open Innovation models.

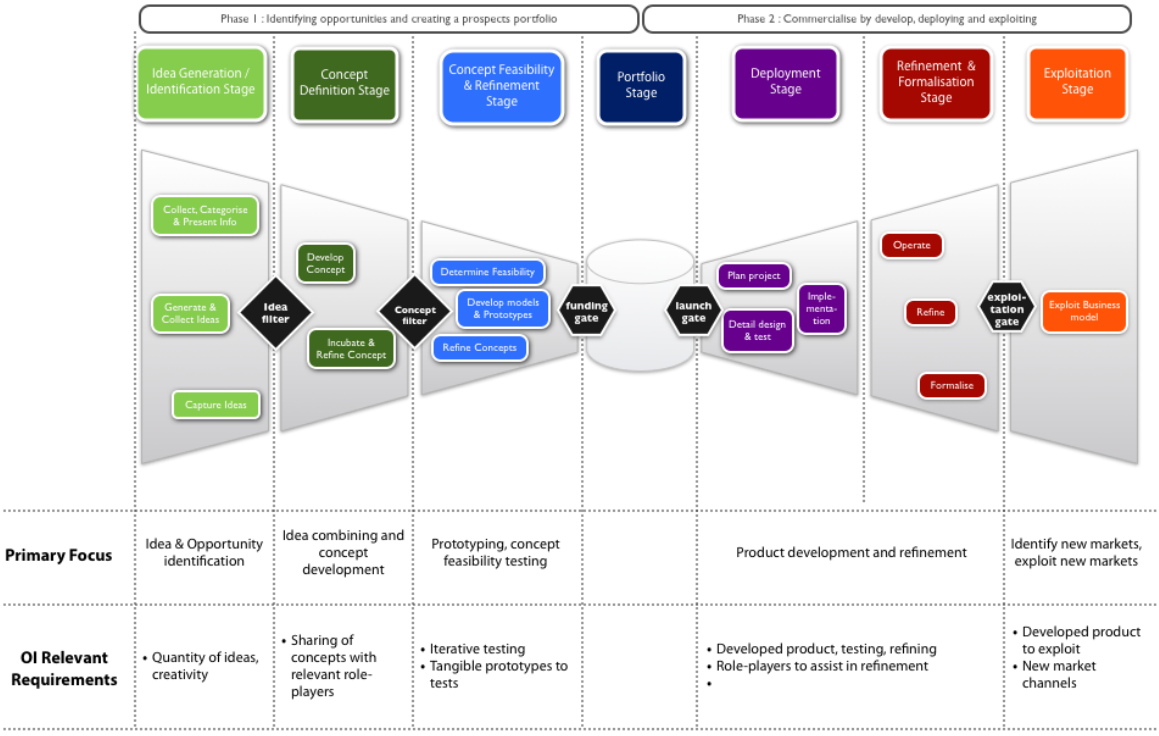


Figure 44 - The focus and relevant requirements of the Fugle model's stages

The allocation of the Open Innovation models will be done per stage, following the logical flow of the Fugle model. The allocation is not intended to be a complete substitute for all activities within the Fugle process, only for specific activities. The organisation has to find the balance between opening certain activities and facets of the innovation process within each phase, while retaining full control of others.

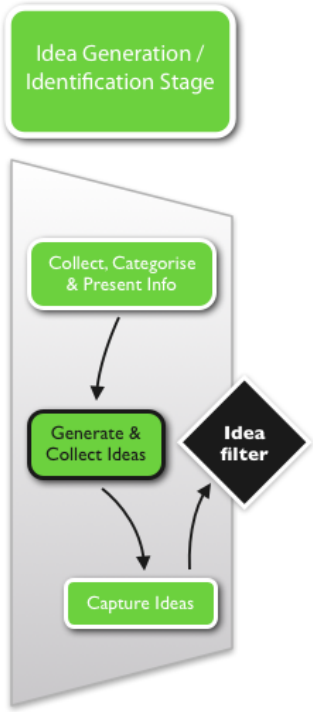
It is this balance that shall prove to be the greatest asset of the innovation management process of the future.

The activities onto which the Open Innovation models will be most applicable per stage will be presented with a dark border in the diagrams below.

6.1.1 Idea Generation / Identification Stage

As described in section 0, the first stage of the Fugle model is concerned with *generating large quantities of ideas* to fulfil identified opportunities aimed at meeting identified customer requirements. Generating the required ideas require creativity and a fresh approach.

Therefore, the Open Innovation model that will best support these stage is the Idea Competitions model described in section 5.3 – specifically the **open-ended type** of **idea competition**, as described by Riley in section 4.4.2.3.



The organisation still has the responsibility to perform specific tasks, which explains why the organisation still has the hierarchical control over the entire process.

It is the organisation's responsibility to provide guidelines to the prosumer regarding the general direction and area of opportunity. The organisation must also manage the idea collection (capturing) and filtering processes.

The specific activity that lends itself to being open is the actual idea generation. It is here that the open-ended idea competitions can be deployed to increase the quantity of ideas, as well as the possibility of creative input into the process.

The open-ended idea competitions were specifically chosen because they can be used for broad, undefined proposals. The fuzzy front-end of the Fugle process will benefit most from deploying a model that has limited bounding characteristics to pursue the widest possible approach to generating new ideas or opportunities.

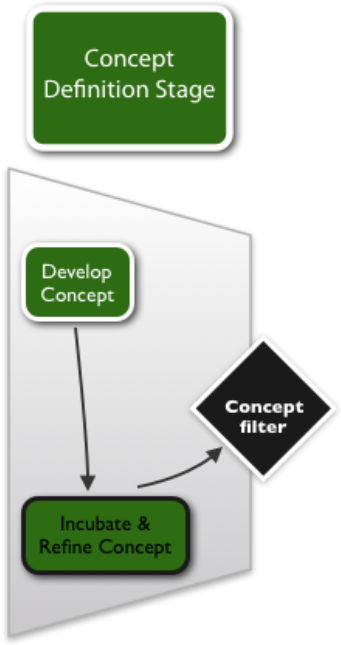
As a guideline, typical open-ended problem statements that have been used by Idea Bounty (open-ended idea competition management firm, discussed in section 4.4.2.3 (iii) when describing an open-ended idea competition are as follows:

- Assisting a luxury car company in developing new approaches to gain more information on prospective customers.
- Assisting a well-known clothing apparel brand in creating new ways to increase the brand presence via music festivals.
- Developing a new drinking "ritual" for a well-known energy drink producer, to be used for marketing purposes.

As can be derived from these examples, the statements need to be open-ended to foster creativity to spark new ideas that can be further exploited in the following stages. Idea competitions as an Open Innovation model were discussed in section 5.3.

6.1.2 Concept Definition Stage

The concept definition stage was described in detail in section 3.4.2, although in its essence the stage is concerned with combining the filtered ideas from the previous stage to develop a concept and thereafter incubating the concept to refine it. The final activity associated with this stage is the concept filter, through which the refined concept should pass if it were to continue with development.



Once again, it is not recommended that all the activities of this stage be opened. The initial concept development activities (combining of ideas and concept formulation), as well as the filtering activities need to be internally completed.

It is during the concept incubation and refinement activities that the input from outsiders is recommended, as the sharing of the concept will support the incubation and refinement processes.

The sharing and collaborative approach to refining can be supported by **speculative-type idea competitions**, as well as **innovation networks**, if it is deemed suitable.

These two models will help to address problems (technical or non-technical) experienced early on in the concept definition process. Innovation networks provide the possibility of finding quick solutions to problems which would enhance the plausibility of adoption, while speculative-type idea competitions could generate content needed early on for the definition of the concept.

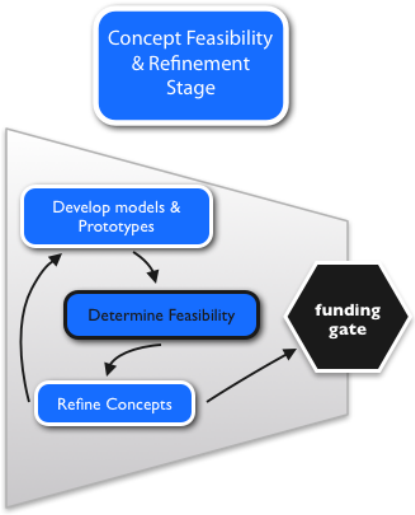
Instead of the organisation allocating valuable resources to incubate and further define the concepts internally, these models can be deployed to find quick solutions. Although this will be beneficial, it will however place more pressure on the concept filter to identify only the most appealing concepts effectively from the increased volumes it will have to filter.

The organisation is once again faced with the challenge of finding the balance between internal and collaborative activities. Added to this is the challenge of acting collaboratively to facilitate the incubation and refinement activities without risking the possibility of increased, unnecessary resource expenditure to enable the collaboration.

6.1.3 Concept Feasibility & Refinement Stage

As was mentioned in section 3.4.3, this stage further develops the filtered concepts to determine their feasibility and finalise their refinement. The feasibility testing of the concepts is supported by developing prototypes or models that represent the finalised product. These prototypes are then presented to specific role-players to test and determine the feasibility of the intended product.

This stage tends to take on an iterative nature, as the recommendations retrieved from the prototype testing need to be incorporated and tested again (refined). There is only one activity that is recommended for opening up – the feasibility assessment.



The initial representation of the product (prototypes and models) needs to be developed by the organisation. The concept refinement actions also need to be internally completed to ensure that the iterative process is controlled in an agreed-upon manner.

The feasibility testing is recommended for external collaboration, as the role-players should at least partially represent the intended target market.

This could prove to be difficult to manage, because it may be impossible to share a product concept without running the risk of sharing proprietary knowledge.

Therefore, the inclusion of external role-players should be controlled, as depicted in Figure 35. It is not suggested that collaboration be completely closed, rather that it be partially opened to include trusted external role-players.

The Open Innovation models that are recommended for this stage are **speculative-type idea competitions**, and most importantly, **customer immersion**.

Customer immersion, as described in section 5.4, is a modern adaptation of focus groups. Its application during this relatively early phase of the innovation process concerns identifying the plausibility of the intended product.

This is done by having the potential customers interact with the concept to determine the following:

- Significant points of difference
- Market attractiveness.

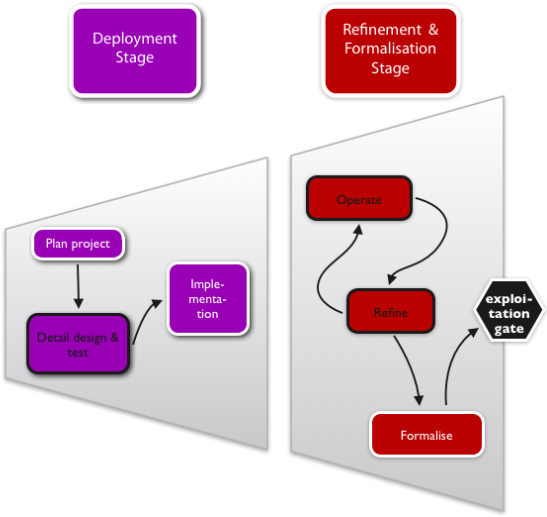
Incorporating the suggestions from the customer-immersion activities could result in identifying new avenues for exploration, thus opening the possibility of deploying speculative-type idea competitions, as discussed in section 5.3.

6.1.4 Deployment Stage and Refinement & Formalisation Stage

The Deployment Stage and the Refinement & Formalisation Stage are viewed in combination when referring to the inclusion of Open Innovation in the Fugle model to facilitate the iterative nature of this part of the process.

The primary focus of this phase, as described in sections 0 and 3.5.1, concerns the detail development, testing, implementation and then refinement as the product is brought into operation.

Once again, it is not recommended that all activities of these stages be opened up. It is recommended that the initial project planning, implementation and formalisation processes should be internally completed and controlled. These activities are the *raison d'être* of the organisation, as they constitute the core to what gives the organisation hierarchical control over its customers and competitors; therefore it is crucial that full control is kept over the identified activities.



It is however suggested that the detail design and testing, as well as the operation and refinement activities, are opened up by using the following Open Innovation models:

- **Innovation networks**
- **Collaborative product development**
- **Customer immersion**
- **Idea competitions**

If the project planning is commenced using *innovation networks* to assist in the detail design activity of the project, this model could be used. The important factor here is to plan for its inclusion and to ensure that the necessary resources are available to fully manage the model's usage. Innovation networks will thus satisfy, at least in part, the requirements relating to the detail design of the project.

When the project progresses to the detail design activity, *collaborative product development* can also be used to further satisfy the detail design requirements of this phase. This model, as described in section 5.5, and the practical implementation shown in section 5.5.2, provide room for collaboration and create the opportunity to share the responsibility of the detail design of the product.

Although the overall responsibility is still the onus of the organisation, it is also recommended that the testing activities of this phase be done in a collaborative manner, through the use of *customer immersion*.

The level of openness associated with the use of customer immersion during this phase is the choice of the organisation, although a well-marketed and "open-to-all" approach is recommended. The advantage would be increased awareness and exposure for the product, which will be advantageous once the product is formally launched. Also, the risk of exposure would be minimal as the product is at

this stage so far developed that it would be difficult for competitors' imitations to be realised before the product is formally launched.

Once the product is brought into operation, *customer immersion* and adapted *idea competitions* can be deployed to further exploit customer recommendations to refine the product. The onus of the refinement review process is on the organisation, although it is suggested that the customer base be included to provide the suggestions (which will be more beneficial, as they are the end-users).

The aforementioned models thus satisfy the requirements of specific stages of the Fugle model. Innovation networks and collaborative product development will assist in the detail design phase, and customer immersion and idea competitions in the testing and refinement activities.

6.1.5 Exploitation Stage

The final phase of the Fugle process concerns the further exploitation of the developed innovation. It is intended to increase the revenues generated from the innovation by identifying new markets, new business processes or altering the product to fulfil these new requirements and objectives.

Therefore, the primary requirement for this phase, as described in section 3.5.2, is to identify means to further exploit the developed product.

The Open Innovation model that best adheres to the requirements is the **platforming model**, as discussed in section 5.2. The platforming model is ideal to sustain the increases in revenue generated from a new product, as it provides the breeding ground for sustained product alterations, to the advantage of all parties concerned.

Although the platforming model is only realised during the last phase of the Fugle model, the planning and actualisation for it has to be deeply integrated throughout the entirety of the Fugle process iteration.

The model's description and requirements, as set out in section 5.2, will thus have to be fully grasped when it is decided to include it in the innovation process, even though it will only be realised in the final stage of the entire innovation process.

The inclusion of the platforming model in the Exploitation Stage offers various advantages. The prosumer-generated alterations will positively influence the demand for the base product, which will result in increased sales and thus increased revenue. The increased revenue from further exploitation does thus not only refer to the value derived from the actual platforming, but also to the increase in revenue from the base product.

The model will thus succeed in addressing the relevant requirement of the Exploitation Stage by increasing the likelihood of identifying new exploitation techniques to advance the revenue generated from the innovation.

6.2 Summarising the model allocation

The following table provides a summary of the relevant requirements of each of the Fugle stages, as well as the characteristics of each model that will best address the requirements.

Table 6 - Summarised table of allocated models

Fugle Stage	Stage requirements	Allocated models	Models' contributions
Idea Generation / Identification	• Quantity of ideas • Creativity	• Idea competitions	Increases quantity of ideas. Improves customer insight.
Concept Definition	• Sharing of concept to foster refinement	• Idea competitions (Speculative-type) • Innovation networks	Provides opportunity to share. Receives suggestions for refinement.
Concept Feasibility & Refinement	• Concept prototyping • Iterative testing	• Idea competitions (Speculative-type) • Customer immersion	Assists in concept development. Assists in prototype testing.
Deployment, and Refinement & Formalisation	• Product development • Product testing • Refinement	• Innovation networks • Collaborative product development • Idea competitions	Assists in design problem solving, actual product development and product testing.
Exploitation	• Exploitation techniques • New markets • New channels	• Platforming	Assists in capturing more value from markets.

As can be derived from Table 6, the model allocations will help each of the Fugle stages to meet its requirements and goals. A more detailed summary of the model allocations is given in Appendix A. Also, refer to Figure 45 in Chapter 8 for a graphic depiction of the model allocations.

7 validation of the OI model's placements

7.1 The validation method

As the scope of the research does not cater for the practical implementation of these models in a real-life organisation, validation was done via an interview-based assessment with seven experts from various fields, each focusing on the validity of a different aspect of the research.

Regarding the final validation, a description of the seven interviewees, their relevant backgrounds, as well as the focus of each interview can be found in Table 7.

Although the seven interviews serve as the primary validation of the research done, a preliminary validation was also done for a published article (Marais & Schutte, 2009) during the latter half of the research. For this preliminary validation, two innovation experts were consulted for their opinion regarding the validation of the models, as well as the allocation of the models to the Fugle process. These preliminary recommendations were incorporated before any further research and allocation were undertaken.

The hypothesis of the research stated that:

> *Open innovation models can be successfully developed and introduced at specific stages in a standard innovation process, to allow an organisation to make use of those models to improve the success rate of its standard innovation process.*

The methodology followed in approaching the validation of the research involved assessing the validity not only of the different Open Innovation models, but also of the proposed advantages, disadvantages and criteria that should be considered.

If it is found that the models will successfully contribute towards each allocated stage (addressing and supporting the requirements of that stage), it can be stated that Open Innovation will be beneficial to the innovation process as a whole.

Referring to the criteria set out in section 2.6, improvements (changes or additions) to the innovation process should address the following:

- Improving the effectiveness of searching.
- Improving the accuracy of selecting.
- Improving the success rate of implementation.

Therefore, if the model contributions claimed in Table 1 can each be validated and then be related to improving any (or all) of the abovementioned areas, it would improve the traditional innovation process model.

It was argued in section 3.1 that the Fugle model is a valid representation of a standard innovation process framework. Therefore it is assumed that, if the proposed contributions to the Fugle model are deemed to be realistic, it follows that that will be the case for any appropriate innovation process framework.

Testing the validity of the model allocations, the associated characteristics of each model (advantages, disadvantages and criteria to consider when implementing the models), as well as the allocation of the models to a generic process, will therefore serve as proof that Open Innovation can indeed be a beneficial addition to the standard innovation process.

7.1.1 The validation process

As mentioned before, the primary validation of the research was done by interviewing seven experts from diverse backgrounds. These interviewees were chosen to provide a wide perspective on the research.

The goal of each interview differed in the sense that each interview aimed to assess a different focus of the research. For this reason each interviewee was also presented with a unique set of questions to assess the validity of a specific aspect.

Each interviewee was given a 10-page summarised document to provide a background perspective before the interview was held. This document can be found in Appendix B.

The interviews all followed the same order: The author gave a short presentation, providing extended detail from the introductory document, while also highlighting the characteristics that are more relevant to the specific focus of the assessment.

A comprehensive set of transcripts, portraying the relevant aspects from each interview, can be found in Appendix B. Highlights from each of the interviews are given in the following section.

Table 7 - Summary of validation interviewee backgrounds and objectives for inclusion

Interviewer	Occupation / Industry	Reason for inclusion
Prof Frikke Herbst	Lecturer – University of Stellenbosch's Business School Lecturer (Marketing Management) Marketing Consultant	The feasibility of marketing-orientated advantages, disadvantages and criteria of each model. Validation of the theoretic approach followed by the research.
Johann Groenewald	CEO – Tracks4Africa	Validation of model's proposed advantages, disadvantages and criteria. Validation of potential for realistic use.
Truitjie van Rooyen	Woolworths Foods – National Product Developer (Poultry)	Validation of practical usability of OI models, advantages, disadvantages and criteria within the consumer goods industry (B2C perspective).
Liné van Lill	Key Account Manager at Rainbow Farms for Woolworths Foods (Poultry)	Validation of practical applicability of OI models, advantages, disadvantages and criteria within a consumer goods industry (B2B perspective).
Ncami Sithole	National R&D Manager – Rainbow Farms	Validation concerning characteristics from an R&D perspective. Validation concerning the realistic application of the models within a consumer goods industry R&D environment.
Dr Heinz Essman	Innovation Expert / Business Consultant – Indutech	Validation of the correctness of the Fugle stage requirement descriptions. Validation of the correctness of the allocation of the models to the Fugle process.
Dr Louis Louw	Innovation Expert, Head of Research, Co-creator of Fugle Innovation model – Indutech	Validation of the correctness of Fugle stage requirement descriptions. Validation of the correctness of the allocation of the models to the Fugle process
Dr Anthon Botha	CEO – InnovationLab, Innovation consultancy expert	General opinion regarding the validity of the research, and the potential for realistic adoption.

7.2 Feedback from validation interviews

Each interview will be individually described in the following sections. All interview descriptions will follow the same order – firstly describing the goal of the interview, thereafter summarising the feedback received regarding the specific focus of the interview.

7.2.1 Prof Frikkie Herbst

The objective of this interview was to establish the validity of the marketing-related characteristics of the different Open Innovation models, since the interviewee has extensive experience in the marketing industry. These marketing characteristics include the importance of brand preference, the creation of brand awareness, brand equity, as well as the overall requirement of good marketing to ensure the success of the different models.

The interviewee had a positive response to comprehensiveness of the definitions, criteria, advantages and disadvantages given for the different Open Innovation models: "*So, I think all these marketing advantages that you pointed out, makes logical sense. I don't believe you left out anything."* (Herbsts, 2009)

The interviewee also had a positive response regarding the validity of the research for marketing in all the models: "*I must, out of a marketing point of view, state that it is a valid conceptual framework."* (Herbsts, 2009)

However, the interviewee did provide comments regarding the lack of failing case studies in the research. The interviewee was of the opinion that an investigation into requirement identification from failing case studies (as opposed to success stories) will provide additional insight. This aspect is something that should receive attention in further research.

As the interviewee has an academic background, the validity of the methodology followed in the allocation was also questioned, to which the response was: "*I think your basis is correct, and the methodology you followed to allocate the models to the Fugle makes complete sense. And what I like, at least for your presentation to me, was how you referred back to the advantages for marketing.*"

7.2.2 Johann Groenewald

The goal of this interview was to gain input about the practical usability of the defined models as well as the description of the characteristics of the models, as the interviewee is a director of an organisation that deploys Open Innovation principles.

The questioning therefore surrounded the various characteristics of the different models to determine their feasibility. All-round positive feedback was received, which can be found in the transcript in Appendix B. Specific advantages, disadvantages and criteria were individually discussed and mostly approved – the bulk of which can be found in the transcript.

However, it should be stated that it was established that Tracks4Africa already deploys at least three of the Open Innovation models (customer immersion, collaborative product development and platforming). It was therefore established that the interviewee's feedback regarding these models will be of more value, although a general understanding of all the models was shown.

Disagreement on certain criteria was lifted out – for example, the interviewee did not agree with the criteria in the platforming model that state that hierarchical control is a necessity (see transcript).

As a concluding remark, the interviewee stated the following:

"I don't know what exists currently in the literature, but I can definitely see a lot of application for this in the practice." (Groenewald, 2009, 23 Oct)

7.2.3 Truitjie van Rooyen

The objective of the interview was to establish the plausibility of deploying the OI models in the consumer goods industry. Since the interviewee is employed by a well-established consumer service organisation (Woolworths Foods), her opinion regarding the applicability of the models to their product development process was regarded as valuable. Furthermore, the B2C environment is regarded as most suitable for Open Innovation.

As the nature of the interviewee's background and industry is not fit for all of the proposed models (interviewee's opinion), only a selection of models was discussed in detail. These models were: innovation networks, idea competitions and customer immersion. (A later interview with the organisation's supplier revealed that Woolworths Foods already follow a more open, collaborative approach to product development (CPD) as well).

Once again, all-round positive feedback was received.

The interviewee stated that there is definite potential for the adoption of the discussed models, at their organisation and those of their suppliers: "*You are right, but I think that a lot of companies will be able to make use of it, because everyone has unique needs"*, and *"You should tell our suppliers about these services. They should use it!"* (van Rooyen, 2009)

It became apparent that, at least in the interviewee's organisational context, innovation networks would be more fitting to their suppliers, rather to their organisation. This once again reflects the generic basis of the models – each installation should be handled individually.

The models that were proposed to be of more value for their (B2C) environment are idea competitions ("*It is actually a fresh approach to generating ideas."*) and customer immersion (*"What will also be of great value, will be to determine if a product is on the shelf, why is it selling, why is it not selling, what is wrong with it?"* (van Rooyen, 2009).

The interviewee had a positive response to the possibility of including the identified models in their product development process: "*Our companies as a whole will definitely be able to make use of such a service."* (van Rooyen, 2009).

The greatest insight gained from the interview was that Open Innovation is indeed applicable to the consumer goods industry, although the applicability of specific models will differ per industry.

7.2.4 Liné van Lill

The interviewee's experience and background from a supplier's point of view (B2B) provided a perspective from the consumer goods industry. It also focused on the different approaches to potentially deploying Open Innovation in a B2B as opposed to a B2C environment.

The objective of the interview was to determine whether the models are applicable to and usable by their organisation, and secondary, which models are more applicable to the supplier side of the relationship between Rainbow Farms and Woolworths Foods.

The response to the explanation of the different models proved positive. The applicability and usability of certain models are less suitable for deployment in this specific industry: *"Absolutely, it makes a lot of sense. Some models make more sense than others, especially in our industry – like Platforming [won't work], because it's software based…"* (Van Lill, 2009)

However, it was established that all of the other four models (innovation networks, collaborative product development, customer immersion and idea competitions) will be applicable and usable by this specific organisation. Customer immersion will be of more use if deployed for the organisation's own commercial products, as opposed to products meant as input in other organisations' commercial products.

The interview therefore established that the models can be used in this organisation, although specific models will be more applicable at other points within the larger supply chain viewpoint. This proves that the advantages the models provide are acceptable and will be experienced by the interviewee's organisation.

7.2.5 Dr Heinz Essman & Dr Louis Louw

These two individuals were interviewed together, since they have corresponding expertise. The interviewees both have extensive experience in the innovation consultancy field, while Dr Louw was the co-creator of the initial literature written on the Fugle innovation model. Therefore, the focus of this interview revolved around the allocation of the models, more than the description of the models themselves.

The overall feedback was positive and showed respect for the level of clarity that the research is providing: "*I've said to you before, I don't think I've seen this level of "formalisation" in Open Innovation. But I think it is a level of understanding that very few people have had before concerning Open Innovation."* (Louw & Essman, 2009)

However, there was feedback regarding the criteria created for the Platforming model (**L** refers to Dr Louw, **S** to the author of this text):

> ***L:*** *Quickly show me the definition for Innovation networks? I agree with everything, except for the criteria relating to the requirement of a well-defined technical problem.*
>
> ***S:*** *But then it will agree a lot with idea competitions, won't it?*
>
> ***L:*** *Yes, but an idea competition to me is more open – you go to a broker to host a competition. An innovation network to me is more a network where you know the people you work with well and collaborate with well.*

The legitimacy of this feedback will only be proved once these models are implemented and tested, which is not the scope of this research.

A comment regarding the usability of idea competitions was also received:

> *"What we have found though, what our clients have mentioned about idea competitions is that it lends itself [sic] more towards incremental innovation, rather than disruptive (radical) innovation.*
>
> *"I fully agree with making use of idea competitions, the fact [is] that our clients complained that it only brings incremental innovations – I responded that you can get ideas for radical innovation from the ideas you get in from your idea competitions. You gain a whole lot of insight, that you wouldn't otherwise have had." (Louw & Essman, 2009)*

These comments once again reiterated a specific advantage of idea competitions (and innovation networks) – the hosting organisation gains a lot of customer insight besides the winning idea or solution: "*[I]t branches out drastically from those ideas. Ideas stimulate ideas."* (Louw & Essman, 2009)

As can be deduced from the interview, besides the mentioned comments, general approval was given regarding the allocation as well as to the usability of the models.

7.2.6 Ncami Sithole

The interviewee has extensive experience of research and development. Although the interviewee was unable to allocate a time slot for a one-to-one interview, the following feedback, derived from the 10-page summary document, was received via electronic correspondence:

> *"I got a chance to read the document and I think it is very good! Some of the processes mentioned we are currently using like customer immersion (during idea and development phase), collaborative product development. We currently don't do idea competitions but last week we were talking about it and we thought we could add value to our process. I see potential on platforming, maybe limited in our industry but can really give some guidance from the consumer's point of view. The Fugle Innovation Model is quite detailed*

which gives lot of opportunities, ideas and checking with final users (more confidence at launch phase)." (Sithole, 2009)

7.2.7 Dr Anthon Botha

The objective of this interview was to evaluate the potential for realistic adoption and usage, and to assess the general validity of the research. Whereas the previous interviews all focused on the validity of specific parts or areas of the research, this interview assumed a more holistic viewpoint of the entire research effort.

Positive feedback was received from the interviewee regarding the usability of the models:

"I think there are consultants that can make use of this.

"You took the Fugle model, you developed the different Open Innovation models and you merged the two. You defined the concept of Open Innovation in the B2C environment, where I think it is very applicable. You looked at case studies for each of the models, to see how they will fit in." (Botha, 2009)

Various critiques were given surrounding different criteria and other characteristics. A lot of emphasis was placed on the lacking aspect of socialisation, a driver which the interviewee feels is important to increase the value gained from the different models (if applicable): *"You can gain a lot of ideas through this, but the lacking feature is the "contagious factor … It is the social aspect that is lacking."* (Botha, 2009)

It will in various instances be either impossible, or difficult to deploy a socialising aspect as part of the models, as this will place tremendous complexity on the handling of incentives and IP ownership. This does not mean that socialisation does not occur at a less formalised level, without the intrusion of the hosting organisation.

The interviewee also stated that the success of innovation networks will be short-lived:

"People [will] get smarter, and realise they can get more from their IP than the "$5 000"? Why would you be satisfied with the prize money, when you know the product will eventually sell across the world? ... I wonder how long the model will survive. Because when people become aware of the value of their knowledge, will it still work? And once again, it is an evolutionary process. It can work for now, but will it forever?" (Botha, 2009)

As these innovation network challenges are mainly hosted anonymously, prosumers don't know to whom they are presenting a solution. This will decrease the likelihood that prosumers will refrain from participation because of lack of remuneration, since they aren't aware of the reach and influence the solution may have.

In the interviewee's opinion it is clear that the models are more applicable to the physical product industry, and that it should be clearly stated in the research effort. "*You should be concise in stating*

that you are mainly focusing on product innovation." (Botha, 2009)

As was the case with the other interviews, the interviewee agrees that there is definitely potential for practical deployment: "*I think there are consultants that can make use of this ... I think you have a well-developed, well-formulated piece of work"* (Botha, 2009)

In later electronic correspondence, the interviewee stated that:

> *"Your thesis-work looks good, and your approach is well thought out. Your choice of Open Innovation models and the allocation thereof to the Fugle model is an original approach. The advantages, disadvantages as well as the criteria created are relevant, and the phases of allocation show practical potential." (Botha, 2009)*

This serves as further validation that the interviewee sees practical potential for the research, and also validates the approach taken in the research.

7.3 Summary of validation interviews

A total of seven individuals were interviewed to serve as the primary validation of the research done. Each of the interviews focused on a different area of the research, for which individuals with relevant experience and expertise were approached.

All the interviewees agreed that there is potential for practical deployment of the models. Different interviewees responded differently to different models, according to the applicability of the models to their specific industry.

The interviewees who were approached to assess the validity of the characteristics of the models also responded encouragingly, stating among other things that the research "provided a level of understanding few people have been able to achieve".

It is, however, realised that the model characteristics may at this point in time be limited and of a conceptual nature, but this will only be improved once the models are implemented in a realistic environment.

It is therefore assumed that the models will, for their current level of development, deliver the stated advantages and disadvantages, and require the stated criteria. Together with this, specific interviewees also approved the validity of the allocation of the models to the proposed stages of the Fugle model (Dr Louw and Dr Essman).

It can therefore be stated with fair confidence that, if the models are indeed correctly allocated and offer the intended benefits, this formalisation of Open Innovation will be beneficial to the standard innovation process, according to the following arguments (as presented in section 2.6):

- Improving the effectiveness of searching
    - *Idea competitions* will increase the quantity of ideas and identified opportunities.

- Improving the accuracy of selecting
    - *Innovation networks*, *customer immersion* and *idea competitions* will increase the accuracy of "selecting" by providing more relevant insight and more relevant contributions while developing a concept or a product.

- Improving the success rate of implementation
    - *Innovation networks, customer immersion, collaborative product development* and *platforming* will increase the success rate of creating commercially successful products. This will be achieved through reduced development costs, reduced development time and more relevant product testing and product customisation.

8 Conclusions and Recommendations

8.1 Conclusions

8.1.1 Methodology summary

As the nature of innovation has evolved and progressed (as depicted in Figure 6), a research effort on the concept and formalisation of Open Innovation was required. This research then, focused on the concept of Open Innovation and bridging the gap between this new evolutionary chain and the traditional Closed Innovation paradigm.

The primary goal of the research was to determine whether Open Innovation could be incorporated into the standard organisational innovation process framework. This was achieved by investigating Open Innovation, developing Open Innovation models, and then, using the Fugle model as basis, allocating these models to a generic innovation process, by means of matching Open Innovation model offerings to the requirements of the detailed innovation process.

The secondary goal was therefore to identify and define implementable, independent Open Innovation models that an organisation could use of at specific points in the standard innovation process. Each of the models was given a formal definition, as well as distinctive characteristics (advantages, disadvantages and criteria to consider when implementing the models).

The research was commenced with a study of whether opportunity exists (or is required) in the R&D filed (innovation process) to introduce Open Innovation as a plausible alternative. It was found that the innovation process requires improvement with regard to three areas (improving the effectiveness of searching, improving the accuracy of selecting, and improving the success rate of implementation – section 2.6).

The focus then shifted to identifying and describing a standard innovation process. The Fugle Innovation Process Model was chosen for this role. This model was chosen because it offers a good representation of the innovation process and is generic by nature. The reasoning is that, if a model is applicable to a generic innovation process, it will also be applicable to more specialised variations of innovation process models.

The research then progressed to investigating the Open Innovation paradigm in general (to establish a greater understanding of the concept), whereafter the focus moved to developing and defining the different Open Innovation models.

Throughout the entirety of the text, a strong reliance was placed on case studies and real-life examples. The reason for this was twofold:

- There is not much literature on Open Innovation models, since every organisation is developing its own approach to the introduction thereof in their own organisation. These practical examples were categorised to fit in with the proposed OI models.
- Investigating and incorporating real-life scenarios ensured a level of realism to emphasise the likelihood of actual adoption and usage of the models by organisations.

The essential characteristics of each model are therefore based on the investigation of real-life examples: it is from these examples, case studies and interviews that most of the model characteristics (advantages, disadvantages and criteria to consider when implementing the models) were developed.

It is then according to these characteristics that the five OI models were allocated to the Fugle Innovation Process Model, at specific points within the model. The allocated models therefore provide organisations with the opportunity to deploy an Open Innovation approach at certain points within their process.

8.1.2 Results and concluding remarks

The output of the entire research exercise is a guideline as to how to incorporate Open Innovation in the standard innovation process. This gives organisations the opportunity to “open up” or remain closed at specific points in their internal innovation process, according to their requirements.

A depiction of the allocated models can be found in Figure 45:

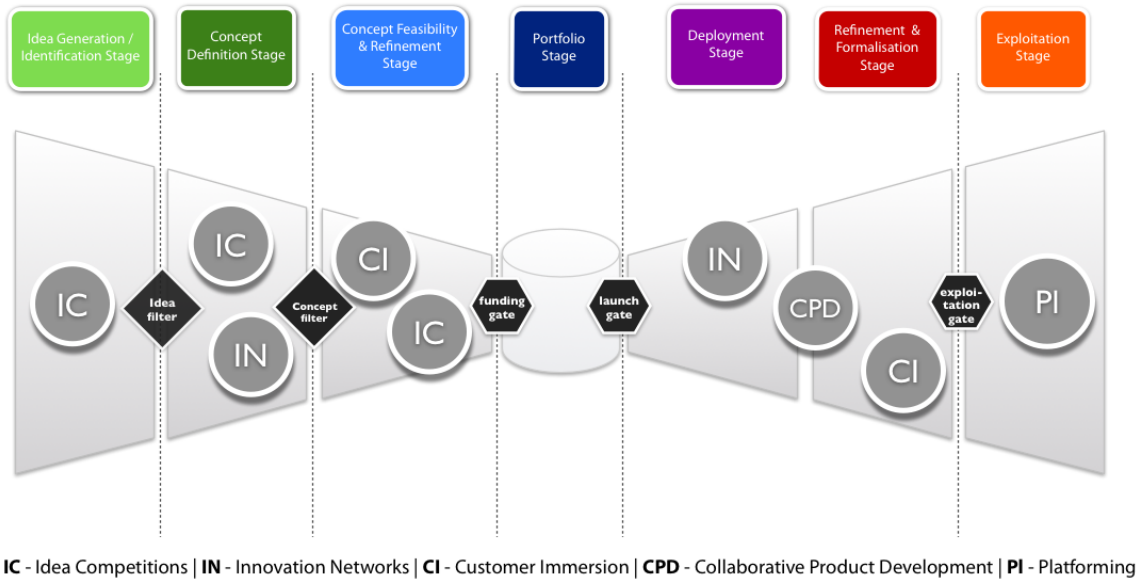


Figure 45 - The allocated Open Innovation models

This guideline merely provides direction – organisations are in no way forced to deploy these models in their formalised process. The level of openness can even differ per iteration of the organisation’s innovation process.

The research methodology followed showed how the two areas of research (innovation and Open Innovation) could each be researched and then merged via the need of the one (Fugle stage requirements) and the offering of the other (Open Innovation model characteristics). This methodology is graphically depicted in Figure 1.

The research effort resulted in a conceptually validated (via different interviews) guideline portraying and explaining the inclusion of Open Innovation in the standard innovation process. The interview-based validation further strengthened belief in and validity of the research done.

It was learnt that Open Innovation can in no way be cast in stone. Just as the innovation paradigm is an ever-changing, evolving mindset, so too is Open Innovation. Each instalment of the Open Innovation models will differ from industry to industry, from organisation to organisation and even from iteration to iteration.

It was for this reason that the models were developed in as generic as possible a fashion – not to limit the applicability thereof, but also to provide a basis for further research to incubate further developments.

It was also learnt that the frantic pace of technological development will force organisations to adapt to incorporate the ever more powerful prosumer earlier into the innovation process. This inclusive mindset has progressed from a rewarding opportunity model in the early 2000s to a model where prosumer inclusion will become a necessity in the organisation of tomorrow.

The collective power of the community is a shaping force that will mould the highway to success in the organisations of the future. Success will be guaranteed for the organisations that can successfully metamorphose between following an open approach to innovation, and closing that process at other times to maintain hierarchical control.

This introductory research effort then lays the groundwork for how the organisation of the future will bridge the gap between the evolutionary chains of Closed and Open Innovation.

8.2 Recommendations for future work

As mentioned in the previous section, the goal of this research was to introduce and present Open Innovation in a formalised fashion. This resulted in a conceptual representation of the different Open Innovation models and their allocation to the innovation process.

8.2.1 Practical application of the models

The conceptual nature of the research outcome leaves ample opportunity for further research into the **practical application of the models**. The real validity of the models will only be determined via real-life implementation.

The focus of such a research effort can focus on any of a number of areas, including:

- **Are the models correctly allocated**?
  A real-life implementation will reveal whether the models are indeed correctly placed in the innovation process, and whether other stages of the innovation process can benefit from the developed models.
- **Do the models provide the intended advantages**?
  Although the characteristics (advantages, disadvantages and criteria) of the models have been validated on a conceptual level, it will only be possible to determine the realistic characteristics of the models once they are put to the test in practice.
- **The further refinement of the Open Innovation models**
  It is only via real-life implementation that the models can be further refined. This would include the refinement of the existing characteristics and allocations, as well as the possible identification and development of new models.
- **Determining industry-specific Open Innovation models**
  As was revealed via the interviews, certain models may prove to be more relevant in certain industries than others. The categorisation of the differences in this respect should be thoroughly investigated.

It should once again be reiterated that this research serves to lay the groundwork. Because of the evolutionary nature of the topic, it should continuously be investigated to determine the continued validity of the different models.

8.2.2 Application of Open Innovation in the service industry

The generic nature of the conceptually developed Open Innovation models presents the opportunity to apply these models in either a product or a service industry. It is however clear that the case studies presented and the individuals consulted all relate to a physical product environment.

A research effort should therefore be commenced to determine whether the applicability of the models to the service industry will differ from their applicability to the product environment and, if so, to what

8 Conclusions and Recommendations

extent it will be different. The primary focus should be to determine whether Open Innovation can indeed be applied to the service industry, and which models would be easier to deploy.

The application of Open Innovation in the service industry may reveal a new strategic approach, and therefore a different subset of applicable models.

8.2.3 Linking strategy, change management and the relationship between Open and Closed Innovation

As was the intention of this research effort, a well-functioning balance between Closed and Open Innovation should be the primary objective. The success will lie in creating formalised structures and the capabilities of deploying either Closed or Open Innovation tools or models according to the requirements of the specific iteration of the innovation process.

These capabilities will require a well-developed formalised process structure. More importantly, it will require extensive strategic vision to determine which direction to pursue to reach the correctly balanced position between open and closed innovation in an organisation.

Added to this is the difficulty of managing the factors and variables that will change as the balance between open and closed innovation changes.

Research could therefore be conducted to investigate the relationship between these factors, the strategy governing them, as well a framework by which the entire process can be guided.

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IX Appendices

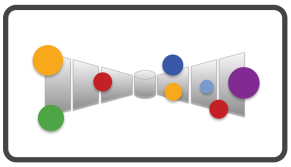
Appendix A

Open Innovation two-pager summary

Appendix B

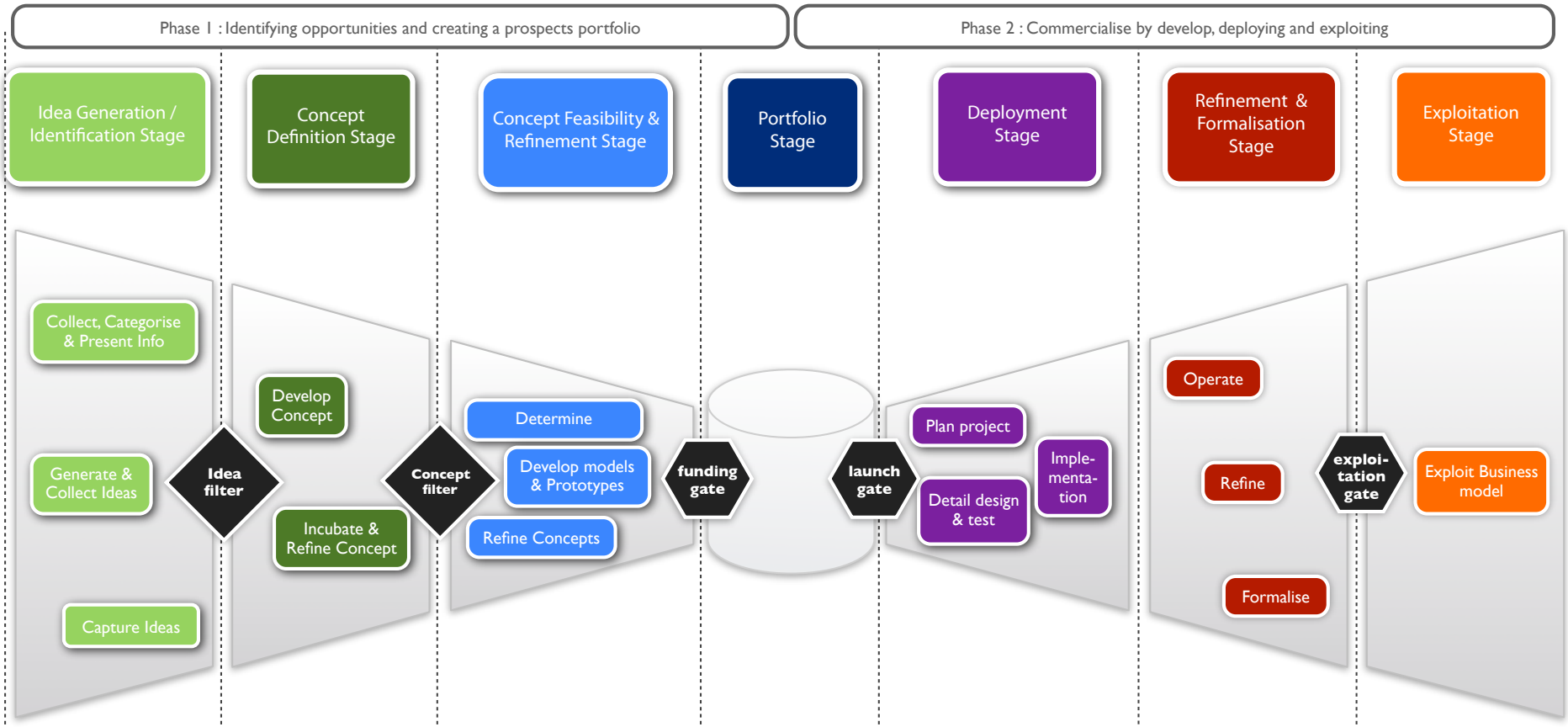
Interview background information document

Interview transcripts



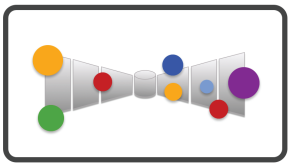
a appendix

open-innovation two-pager summary



Primary Focus of Fugle Stage	Idea & Opportunity identification	Idea combining and concept development	Prototyping, concept feasibility testing		Product development and refinement	Identify new markets, exploit new markets
OI Relevant Requirements	• Quantity of ideas, creativity	• Sharing of concepts with relevant role-players	• Iterative testing • Tangible prototypes to tests		• Developed product, testing, refining • Role-players to assist in refinement •	• Developed product to exploit • New market channels
Allocated OI Model(s)	• Idea Competitions	• Spec-type Idea competitions • Innovation Networks	• Spec-type Idea competitions • Customer Immersion		• Innovation Networks • Collaborative Product development • Idea competitions	• Platforming
OI Model's contributions	• Increases quantity of ideas • Improves customer insight	• Provides opportunity to share, receive suggestions for refinement	• Assists in concept development • Assists in prototype testing		• Assists in design problem solving, actual product development and product testing	• Provides opportunity to gain more value from current product.

Open Innovation Model	Definition	Advantages	Disadvantages	Criteria (Requirements)	Applicable Fugle Stages
Platforming	*The technique of developing and introducing a base product with the purpose of providing a basis for prosumers to access, customize and exploit certain facets of the base product to extend the capabilities of that product whilst providing value increases for all parties involved.*	Increases demand for base product	More Applicable to software industry	Requires a base product / service / brand	Exploitation Stage
		Potential for increased revenue from alterations	Only applicable to certain industries	The base product / service must be accessible and customisable	
		Customised product will be more fitting to customer's needs	Requires a well-established brand	Requires organisation resourceses to assess entries	
			Risk of sharing proprietary information	Prosumers willing to participate	
				The customisable product must be attractive to prosumers	
				The product / service must be well marketed	
				The product needs limited customisability	
				Clearly defined procedures regarding renumeration	
Idea Competitions	*The technique of adapting an idea suggestion system to be more competitive by rewarding successful submissions (from inside or outside the organisation) financially, or in other forms related to the organisation.*	Increased quantity of ideas	Difficult to Control IP rights	Requires organisation resourceses to assess entries	Idea Generation Stage, Concept Definition Stage, Concept Feasibility Stage, Refinement Stage
		Increased brand-awareness resulting from competition	More appropriate for web-applications	Clearly defined procedures regarding renumeration	
		Gain customer insights	Requires additional resources to host and evaluate competition	IP Rights & Protection needs to be in place	
				Product / Service with which prosumer is familiar	
				Intended goal of competition should be defined (speculative / broad)	
				Requires intense marketing to promote competition	
Customer Immersion	*A technique whereby customers' inputs as to product requirements and expectations are exploited through intense customer interaction and the involvement of, and study by employees in the customer-product interaction process with the assistance of new technologies.*	Suggestions and recommendations from end-user	Requires increased organisational resources	Mimimised barriers between prosumers and product developers	Concept Feasibility and Refinement Stage
		Earlier error and defect detection	Risk of sharing proprietary information	Sensible selection of partaking prosumers	
		Earlier awareness for intended product	Partaking prosumers not representative of intended target market	A well defined, and tangible prototype eases the process	
		Less expensive product testing	Appeals more to Business-to-Consumer	Continuous contributor engagement fosters participation	
				The offering has to be simple and easily understandable	
Collaborative Product Development	*The technique of increasing the importance and responsibility of suppliers' and customers' role in the product design process and supply chain to result in increased productivity to the benefit of the organisation, and eventually the customer.*	Decreased development cost for organisation	Difficult to ensure and maintain quality	Well defined and communicated requirements and specifications	Deployment Stage, Refinement and Formalisation Stage
		Reduced design time	Risk of not receiving collaboration	Well defined and communicated contractual agreements	
		Allocated resposibility forces higher quality participation	Arduous task when community is large	Clearly defined policies regarding ownership (and migration of ownership) of Intellectual Property	
				Clearly defined procedures regarding renumeration or	
				An open, communicative environment	
Innovation Networks	*The technique of incorporating the input from a network of contributors in the form of solutions to identified problems related to the hosting organisation in exchange for a reward in the form of an incentive.*	Increased rate of problem solving	Risk of problem not being solved	Clearly defined procedures regarding renumeration	Concept Definition Stage, Deployent, Refinement and Formalisation Stage
		Increased likelihood of solving internally unsolvable problems	Requries prolonged resource allocation to assess solution proposals	A well defined, technical problem	
		Potential reduced cost of problem solving	Problem will get more attention if presentable in electronic form (web)	An active and participating community	
			Requires well-defined, technical problem	Organisational Capabilities to assess entries	
				Clearly defined policies regarding ownership (and migration of ownership) of Intellectual Property	



b appendix

validation summary

10-pager document
interview transcripts

The development of Open Innovation models to assist the Innovation Process

Validation Background Info

October 2009

Stephan Marais
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1 Purpose of the research

The purpose, or intended goal of the research undertaken is to determine whether an innovation process model (or framework) can be aided with new tools to increase the probablity of succesful iterations of that innovation process framework.

Innovation, as will be descibed in the following section, is the process of managing new product/service (or processes) development from idea generation through development to actual implementation. The management of this holistic process is done through the assistance of an innovation process framework – and it this framework that is now investigated to be improved with the addition of new complimentary models.

These models are all associated with an *open* approach to the *innovation* process. Open innovation, as it is referred to, allows the organisation to incorporate the input from outsiders at specific points in the innovation process, if the organisation wishes to do so. The means as to how this is achieved, is described by the five developed, and implementable open innovation models, as will be descibed in later sections.

The concept of open innovation has gained tremendous grounds during the last 3-5 years. In the companies where open innovation has been introduced on a strategic level it has seen real benefit – these companies include Apple, Google and Procter & Gamble.

The difficulty is that although certain companies are pursuing this new, open approach to innovation, very little standard literature and guidance is provided as to how to go about exploiting the open innovation concept. The purpose of the research is thus to assist in the standardisation of implementable open innovation models.

2 Research Method

This was done by researching a specific innovation process framework and identifying the needs of that framework. After this, open innovation was researched in general, and hereafter 5 methods (models) were developed that can be implemented at specific points in the innovation process framework, to address the specific requirements of the framework at the specific points in the framework.

The models are described according to their advantages, disadvanges as well as requirements and aspects that must be considered for implementation. These models thus provide guidance (a framework) on how an organisation can go about implementing an open-innovation approach onto the new product development (or innovation) process.

3 Your Role

Your input will be much appreciated concerning the applicability and usability of the developed models. It is required that the developed open innovation models be validated, and that their placement on the standard innovation process framework evaluated.

This will be achieved through via a one-to-one interview, where your opinion about the models, their advantages & disadvantage as well as the allocation to specific Innovation process stages will be evaluated. Before we can achieve this point, a (very) short summary of the research done will be presented to act as background information. Please keep in mind that a more ellaborated description of the models (as well as the standard innovation process framework) will be provided during the one-to-one conversation.

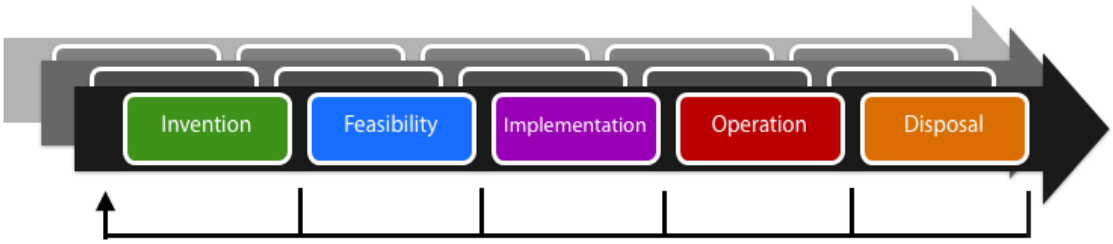
4 Background info

Following is a very short description of innovation, the process (framework) through which it can be managed, as well as information on open innovation and the developed models.

4.1 Innovation

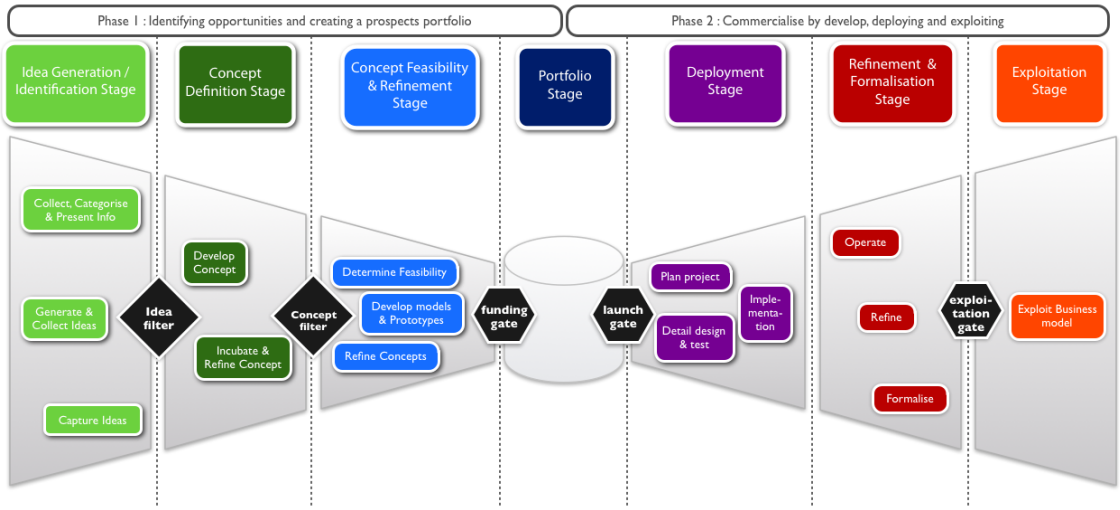
4.1.1 Innovation is a process

Innovation, as was mentioned earlier, is the **process** of managing an idea for a new product/service (or process) through development to the point that it is a commercial success. It is therefore not the same as *invention* (although an invention forms part of an innovation). The steps in the innovation process are shown in the following figure:



This means that the process of coming up with new ideas, selecting which ideas to pursue, and developing the selected ideas to be further developed can be managed to ensure increased rates of successful product development. This entire process has in the past been managed (and contributed to) from, mostly, inside the organisation.

One of these traditional process frameworks that support the management of the innovation process is the Fugle Innovation model. The Fugle model divides the entire innovation process into seven steps, as is shown in the following diagram:



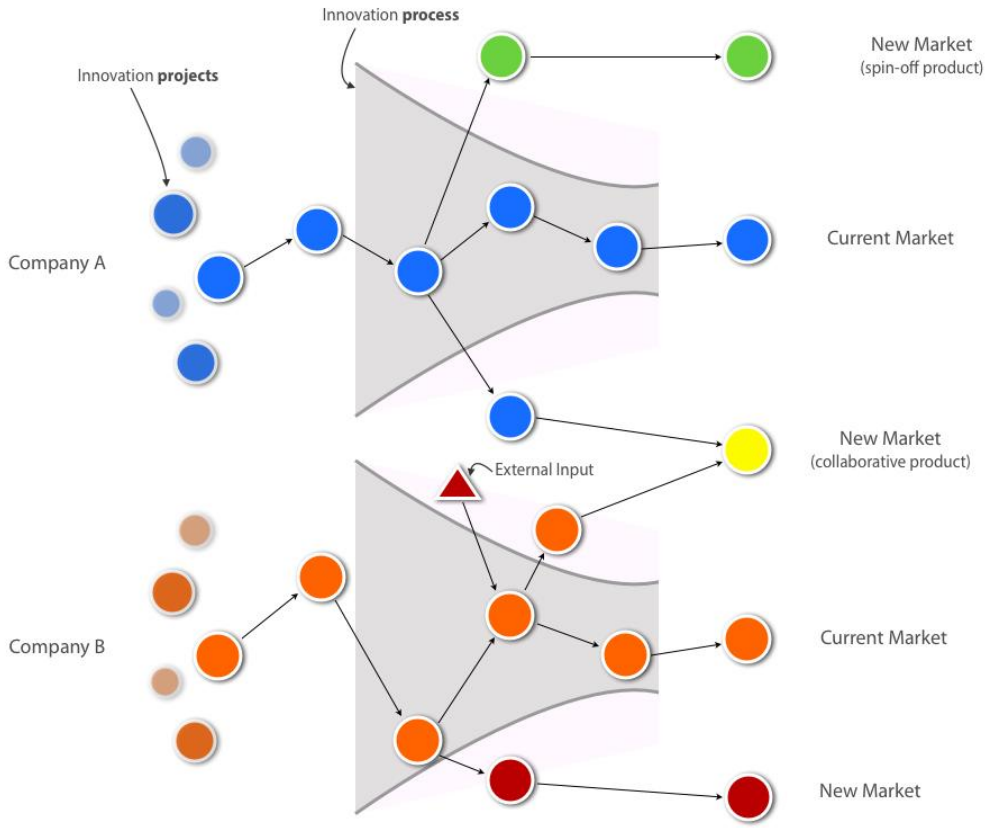
A description of each stage, as well as the primary requirements for each stage can be found on the last page of this document. This will be discussed in more detail during the planned one-to-one conversation.

These identified requirements were used to allocate the open-innovation models, (described in the following section).

4.2 Open Innovation

Whereas the innovation process in the traditional sense accommodated input (ideas, concepts, market research) and activities from inside the organisation, in the open-innovation age, input into the innovation process is recommended to come from various other sources, outside the boundaries of the organisation. This may include customers, suppliers and even competing peer producers.

The following figure gives a graphical presentation of what an open innovation approach will entail. This figure shows how competing (or peer) organisations can potentially collaborate to create new products, how external input can be included halfway through the cycle, or how spin-off products can be created.



4.3 Open Innovation Models

These deliverables will be achieved through the implementation of the developed open innovation models at specific points in the standard innovation process (the Fugle). These models will be described next. *An extended tabular summary of the models can be found on the second to last page.*

4.3.1 Innovation Networks

Organisations are given the opportunity to present product development problems to a *community of solvers*, who will in turn attempt to solve the proposed problem with the hopes of winning a prize. The model thus relates to a competition-based solution suggestion service.

Various publicly available services exist where these “communities of problem solvers” can be reached. Examples hereof are Innocentive (www.innocentive.com), Ninesigma (www.ninesigma.com) and YourEncore (www.yourencore.com). These ‘communities’ (mostly web-based) are protected by their hosting organisation, who also manages the entire problem process.

Any individual (or group of people) can subscribe to a community to receive notifications of proposed problems. The individual (or “solver”) can then decide whether he wants to partake in the challenge. If the individual does, he will have to submit a proposed solution to the proposed problem.

Proposing companies are presented anonymously to the community, who only rely on the problem description to define what is required. Innocentive, the most well known example has a base of 175 000 registered problem solvers. Innocentive's biggest clients (or "seekers") include Procter & Gamble and Eli Lilly. The role that the hosting organisation fulfils relates to the upkeep and building of the community, as well as to serve the role of middleman between seekers and solvers.

Organisations are in no way forced to make use of the commercial available Innovation-network. Instead, an organisation may opt to create its own community of solvers, although this avenue will require additional planning, resources and time.

The greatest advantage of this model is the probable *reduced cost of problem solving*, as well as the *decreases in R&D time*. The greatest risk of the model relates to the *possibility of not solving the proposed problem*, as the organisation has no guarantee that a solution will be found. Also, there is a risk associated with sharing intellectual property not intended for sharing.

The requirements for this model include: having the capabilities (and resources) to evaluate all received entries, clearly defined procedures regarding remuneration and a well-defined technical problem.

4.3.2 Customer Immersion

An adaption from R&D focus-groups, customer immersion involves the study of customers interacting with the intended product (or a prototype thereof) to gain an understanding of their expectations and interaction with it.

This model is therefore more orientated towards the end of the product development life-cycle (prototype testing), although it can still be deployed to assess customer's requirements and gain insight as to their needs and wants.

The adoption of new technologies and trends (social networking, web-forums, and digital prototypes) allows the organisation, customer and product to interact to a new level of richness. The goal is to gain insight as to the customer's likes, dislikes as well as to understand how the customer interacts with the prototype.

Organisations making use of similar models are Google (www.googlelabs.com) and Nokia BetaLabs (www.nokiabetalabs.com). Customers are allowed to interact with software products which are still in development phase, while the developer evaluates the customer's interaction with the product, and relies on customer's feedback to better the prototype.

The greatest benefit of this model is that insight *and recommendations are received from the end-customer for whom the product is developed*. The model will also *reveal errors and defects earlier* in the product development life-cycle. Earlier involvement of customers in the design process will also create

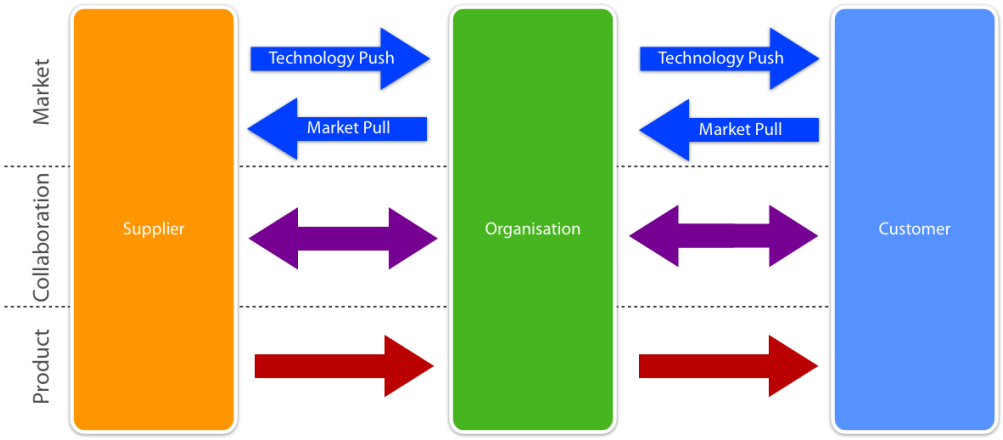
earlier awareness of the product, having a positive effect on the product marketing (which can result in increased sales earlier after product launch).

There are however risks associated with incorporating external role-players to comment and provide feedback on products which are still in development. This includes the *risk of sharing of proprietary information*, which carries a risk of revealing "secretive" information. The model will also require additional resources to assess the customer immersion exercises.

The requirements for this model include minimising the barriers of communication between product developers and customers. It is also required that the contributing customers present a sensible selection of the intended target market. A well defined (or tangible) prototype eases the process, as it will be easier for the customer to interact with a physical product, rather than a hypothetical idea of a product.

4.3.3 Collaborative Product development

Collaborative product development entails the organisation giving increased responsibility to its suppliers (and customers) in the product development process, as is shown in the next figure:



Suppliers are given the responsibility of detail design of certain specified parts of the product. Instead of the organisation providing all the detail technical design requirements, the organisation only provides the requirement specifications, and the responsibility of design is then given to the external role-player.

The organisation thus fulfils the role of *quality assurer* and *mediator*, while *detail design responsibility* is given to the supplying entity.

The greatest advantage of this model relates to the *reduced design time and reduced cost of development*. The greatest disadvantage of the model relates to the difficulty of managing individual contributions, as well as the risk of non-conforming contributions (from customers). It is for this reason that the specified requirements created by the organisation needs to properly describe what is required, to decrease the possibility of useless contributions.

The requirements for this model include well developed and communicated specifications and contractual agreements. The management of IP needs to be setup correctly to ensure all contributing parties are protected.

4.3.4 Idea competitions

Idea competitions can be deployed as an open-innovation model to gain extra input into the design process. This variation on the idea-suggestion system, allows external role-players to suggest ideas relating to specific challenges, with the hopes of being awarded a prize for their contribution.

This model provides similarities to the innovation network model described earlier. The difference is that idea-competitions are orientated towards less defined, broader challenges. These competitions are developed to offer two types of contributions: open-ended idea suggestion, or speculative-type competitions.

The difference being that open-ended competitions are less-defined (orientated towards suggesting new ideas or identify new opportunities), while speculative type competitions require the entrant to deliver a finalised piece of work to qualify for entry.

These competitions are primarily orientated towards *gaining new ideas for new products*, identifying *new opportunities for exploration*, or to *gain underlying customer insight*.

The greatest advantage of using idea-competitions relates to the *quantity of ideas gained*, for very little effort (and cost). As an idea-competition requires extensive marketing, *positive brand awareness* will also be created for the organisation, as a result of the competition's marketing.

On the downside, *extended organisational resources are required* to host the competition, as well as to evaluate all received entries. The *correct setup of intellectual property management* regulations may also prove to be difficult.

The requirements for this model include the requirement to be able to assess all entries, as well as a well-developed scheme for remuneration. Also, an active community who will partake in the competition is also important, while the most important aspect relates to the correct setup of IP rights.

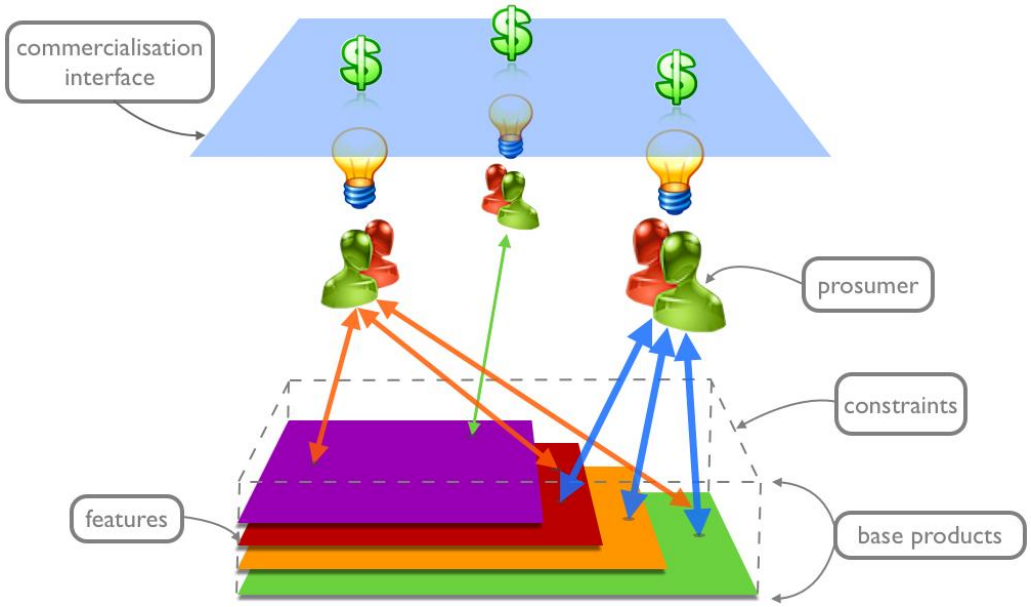
An alternative option is to make use of commercially available services which specialises in hosting idea-competitions for other organisations – Ideabounty (www.ideabounty.co.za) is a Cape-Town based specialist in this field. These hosting organisations maintain their own community, and are then presented with the idea competitions on behalf of the seeking organisation.

4.3.5 Platforming

The final method to incorporate external role-players into the product development process is called Platforming. This concept entails an organisation developing a product to be deliberately "half-completed" – to act as a platform for individuals to customise the offering to increase the value drawn from the base product for all parties involved. The customisations are made to certain facets of the base-product, intentionally developed in this manner by the hosting organisation to be used to create customisations.

The most-well known example of a platform product is the iPhone eco-system (iPhone and Appstore). Apple sells the iPhone product, while a community of developers create applications, which Apple then makes commercially available through the Application store. Profits from application sales are split 70% / 30% towards the application developer.

The following figure provides a depiction of the facets of a platform product:



The commercialisation interface provides the means to draw more value from the customisations. It is crucial for the organisation to keep hierarchical control over the base-product, as well as the means to commercialisation of the customisations, to ensure more value is drawn from the developed innovation.

The greatest advantage of platforming is that customisations to the base product will be done by the end-customer to satisfy his/her own needs – this will be beneficial to the organisation as the end-user is customising a product to suite his/her own personal needs – this *provides target positioning that the organisation would never be able to achieve by itself*. Also, the organisation will receive benefits from customisation from doing very little effort.

Once again, intellectual property management could prove to be a difficulty. Therefore the management hereof, and the communication as to the rules and regulations should be well documented.

Once again, a list of requirements can be made which must be met before this model can be successfully deployed. This includes the requirement of an active base of willing customers (external role-players) willing to partake in the platform exercise. Also, a well developed incentive scheme should be in place which will reward the partaking customers (or external role-players).

The table on the following page presents an extended summary of the aforementioned models, giving formal definitions and an elaboration on the advantages, disadvantages and requirements

5 Allocating the Open Innovation Models to the Fugle

The aforementioned models each offer its own unique advantages, and requirements. These features of the models are compared to the requirements of each stage of the Fugle process, to enable the allocation of the models to every stage, to better that innovation process stage.

The summary of the model allocations, as well as the contributions it offers to the each Fugle stage is presented on the final page.

More information will be provided in the discussion that will take place. It is during this session that more detail will be provided surrounding the Fugle, as well as the allocation of the different models.

Open Innovation Model	Definition	Advantages	Disadvantages	Criteria (Requirements)	Applicable Fugle Stages
Platforming	*The technique of developing and introducing a base product with the purpose of providing a basis for prosumers to access, customize and exploit certain facets of the base product to extend the capabilities of that product whilst providing value increases for all parties involved.*	Increases demand for base product	More Applicable to software industry	Requires a base product / service / brand	Exploitation Stage
		Potential for increased revenue from alterations	Only applicable to certain industries	The base product / service must be accessible and customisable	
		Customised product will be more fitting to customer's needs	Requires a well-established brand	Requires organisation resourceses to assess entries	
			Risk of sharing proprietary information	Prosumers willing to participate	
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				The product / service must be well marketed	
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Idea Competitions	*The technique of adapting an idea suggestion system to be more competitive by rewarding successful submissions (from inside or outside the organisation) financially, or in other forms related to the organisation.*	Increased quantity of ideas	Difficult to Control IP rights	Requires organisation resourceses to assess entries	Idea Generation Stage, Concept Definition Stage, Concept Feasibility Stage, Refinement Stage
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		Gain customer insights	Requires additional resources to host and evaluate competition	IP Rights & Protection needs to be in place	
				Product / Service with which prosumer is familiar	
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Customer Immersion	*A technique whereby customers' inputs as to product requirements and expectations are exploited through intense customer interaction and the involvement of, and study by employees in the customer-product interaction process with the assistance of new technologies.*	Suggestions and recommendations from end-user	Requires increased organisational resources	Mimimised barriers between prosumers and product developers	Concept Feasibility and Refinement Stage
		Earlier error and defect detection	Risk of sharing proprietary information	Sensible selection of partaking prosumers	
		Earlier awareness for intended product	Partaking prosumers not representative of intended target market	A well defined, and tangible prototype eases the process	
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Collaborative Product Development	*The technique of increasing the importance and responsibility of suppliers' and customers' role in the product design process and supply chain to result in increased productivity to the benefit of the organisation, and eventually the customer.*	Decreased development cost for organisation	Difficult to ensure and maintain quality	Well defined and communicated requirements and specifications	Deployment Stage, Refinement and Formalisation Stage
		Reduced design time	Risk of not receiving collaboration	Well defined and communicated contractual agreements	
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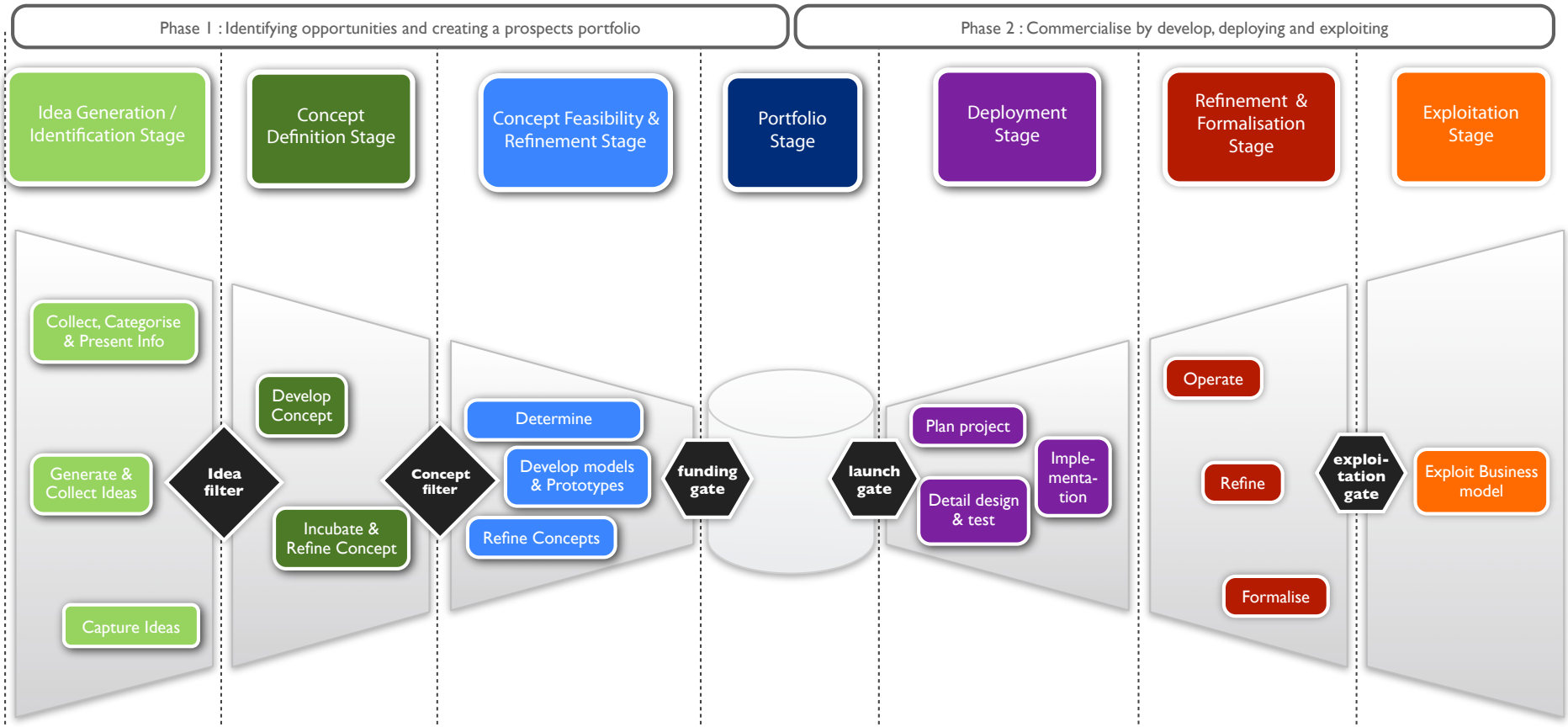
				An open, communicative environment	
Innovation Networks	*The technique of incorporating the input from a network of contributors in the form of solutions to identified problems related to the hosting organisation in exchange for a reward in the form of an incentive.*	Increased rate of problem solving	Risk of problem not being solved	Clearly defined procedures regarding renumeration	Concept Definition Stage, Deployent, Refinement and Formalisation Stage
		Increased likelihood of solving internally unsolvable problems	Requries prolonged resource allocation to assess solution proposals	A well defined, technical problem	
		Potential reduced cost of problem solving	Problem will get more attention if presentable in electronic form (web)	An active and participating community	
			Requires well-defined, technical problem	Organisational Capabilities to assess entries	
				Clearly defined policies regarding ownership (and migration of ownership) of Intellectual Property	



Primary Focus of Fugle Stage	Idea & Opportunity identification	Idea combining and concept development	Prototyping, concept feasibility testing		Product development and refinement	Identify new markets, exploit new markets
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Allocated OI Model(s)	• Idea Competitions	• Spec-type Idea competitions • Innovation Networks	• Spec-type Idea competitions • Customer Immersion		• Innovation Networks • Collaborative Product development • Idea competitions	• Platforming
OI Model's contributions	• Increases quantity of ideas • Improves customer insight	• Provides opportunity to share, receive suggestions for refinement	• Assists in concept development • Assists in prototype testing		• Assists in design problem solving, actual product development and product testing	• Provides opportunity to gain more value from current product.

Interview Transcripts

Dr Frikkie Herbst (F)
Senior Marketing Lecturer
Interviewed at the USB
14 October 2009

S: We need to establish whether the advantages and disadvantages are realistic, because if that is established, we can assume that the proposed OI models can make a contribution to the Fugle framework.

F: As you went through the process you followed to fit the models....I liked the methodology you followed, because you used the same method for each of the five models. You defined it, gave its advantages, gave it's disadvantages, as well as the criteria. But what I really like, and which to me say's that it is realistic is that you established all of this with case studies as well.

S: Its almost a catch 22, because I relied on case studies to establish all these characteristics, but now, to a certain extent, I rely on case studies to establish what we've created as well.

F: We can ask one question, because you only used case studies of successful implementations of Open Innovation, right?

S: Although I didn't describe any failing case studies, it did influence the requirements / characteristics I listed.

F: This might be a point to look into. But what I am saying in terms of the validation, I like the methodology you followed, because out of a marketing perspective, you listed everything that is relevant to our conversation today. It is all about awareness, brand awareness, early credibility, word-of-mouth, customer insight, increased demand for base product, the time and costs. So I think all these marketing advantages that you pointed out, makes logical sense. I don't believe you left out anything.

But we might have left out some aspects, because we didn't investigate the practical case studies of failing implementations. This might be the only flaw in the development of this.

But, if I investigate the overlaying methodology, I can't find any mistakes with it, because you compared apples with apples when you did the development, but you also compared apples with apples when you did the model allocations.

S: It was one of the problem areas – deciding how we are going to compare Open Innovation with the Fugle-model.

F: This is my opinion, but I like the methodology you followed, because you chose a specific methodology, and you applied it consequently throughout the research. You applied it to the focus of every Fugle stage, and you applied it to the requirement and the allocation.

I am entirely comfortable with this, because it is based on the same methodology.

S: The big question is, we want to establish whether Open Innovation can deliver a substantial benefit to the innovation process . This will be achieved through investigating the applicability of Open Innovation to the standard innovation process .

F: You are entirely correct, because you quantified *effectiveness,* in the sense of advantages and disadvantages. And you didn't only do this out of a marketing point of view, but out of a global point of view.

S: Marketing does however play an extremely important role.

F: Absolutely, and I hope you mentioned it in your thesis? Because today the role that marketing is playing in product development and innovation is being underestimated. And I like what you have done, because you are linking *effectiveness* to the advantages and disadvantages of the models. And if I remember correctly all of the models offer more advantages than disadvantages?

S: Yes, that is the case, although some model installations will require more resources and effort.

F: Yes, the context of the installation will determine that. Remember you want to develop a generic model. You can't know what the context is going to be.

S: Yes, and it is something I am choosing to defer, as this will consist out of a lot of variations.

F: That is true. My question now is, you have developed these great theoretical models, and personally I think it is well validated. My question is, what is your next step? What are you recommending to be done next? Are you going to start the physical testing of these models?

S: I don't think that actual testing is within the scope of this thesis.

F: But you can make recommendations, for future researchers to investigate this?

S: Given the duration that a "normal" innovation project takes, and given the time that the result-testing will take as well, I feel that practical testing is not within the scope of my Master's thesis. That is the reason why I am relying on conversations like this to determine the validity of the work.

F: On a theoretical foundation, and on grounds of the methodology that you followed, I can't say that I can not validate it. I have to say that I do validate it. I think your basis is correct, and the methodology you followed to allocate the models to the Fugle makes complete sense. And what I like, at least for your presentation to me, was how you referred back to the advantages for marketing.

S: Yes, I did customise the presentation to highlight the aspects which will be more relevant, given your background. When I will be interviewing the other individuals, I will be doing the same then – put more emphasis on the more relevant aspects to them.

F: You will have to. But out of a marketing point of view, I can't give any negative critique as to what you have done. I will however be very open and frank about the one shortcoming – case studies discussing failing Open Innovation projects. The thing is, most models are built on success recipes, which is not always right. So I think when you present your findings, be honest and state that the models do not include failing case study influences.

F: I have been associated with these processes a lot and there are certain things that I look for: the theoretic foundation, and then to do the allocation to the Fugle, you went and chose a methodology and you applied it over all the phases (of the Fugle), and that is what this whole research effort is about.

S: What I did was to apply the Open Innovation models per Fugle stage, but I also identified the specific actions in each stage that are more suited to be "opened".

F: The stages are logical linked to Open Innovation, aren't they?

S: Yes, but just to improve the applicability, I identified the appropriate activities where it should be exercised.

F: That's fine. Then it is acceptable, because your initial work's basis is correct. So no one can judge...because your initial work (basis) is correct, if you go into more detail within each stage it can't be wrong.

S: Do you foresee these models be implemented at real companies?

F: I do, that's why I asked you these questions. If this was a doctorate study, I would have liked to see a few case studies of where you implemented it. But at our level, for your Master's thesis this is sufficient. What you achieved here is a substantial contribution to what exists already. You must feel proud of what you achieved.

S: Thanks, Prof.

F: Do you have any other questions?

S: It is clear from all the models that the sense of community plays a very important role, and that is exactly where the importance of marketing is so immanent...

F: If one refers to marketing related literature on the new product development process, marketing should play a very important central role in it. And the thing that I like about your proposed models is the incorporation from as many as possible networks, and out of a marketing point of view, the advantage (and logic) from each of the five models where it concerns the inclusion of your consumer as early as possible into the development process.

And further, how the other stakeholders are also approached and included in the process. And the model that made me real excited (and one that I don't carry a lot of knowledge about) is the Platforming model.

S: I have thought a lot about other fields or industries outside of software where one could apply platforming, and it is not easy to think of a single example.

F: Yes, I would have to say that this model is maybe linked to technological innovation.

S: Yes, because it is the software that provides the dynamic capabilities needed to make the model a success.

F: In the same sense, Innocentive (Innovation Networks) will be linked to consumer goods, something tangible the consumer can touch. The other exciting option is the inclusion of supplier contribution.

S: Yes, although this will always be in a controlled sense, since it is more difficult to give your supplier free reign. Whereas if one includes your customer's it easier to give them excessive lead-way.

F: Yes, I agree with you.

S: Referring to the supplier participation, I am of the opinion that it will mostly be on a one-to-one basis, as compared to customer inclusion where you try to get as much input as possible.

F: I think that where certain of the models are more suited for a B2C environment (Business to consumer), supplier participation is more suited for a B2B (Business to Business) environment.

S: That is definitely the case.

S: Do you feel any of the models could be applied to any of the other stages?

F: Remember, this model is generic and conceptually developed. As it will be implemented, it will be further refined and assessed. I am not saying that anything here is wrong, because your foundation (basis) is correct.

S: Yes, and since there is no time to do actual implementation, this is what we are relying on.

F: That's why I am saying that your Future Work recommendation will have to focus on practical implementation in specific industries as you put out. But this is a big contribution.

S: Especially if one considers the evolution of innovation, where the latest focus is on Open Innovation. And it is here that the research's contribution is most valuable. Especially since we are attempting to bridge the gap between a standard innovation process model, and the application of Open Innovation models to that process.

F: You will have to sate clearly early in your thesis why you chose the Fugle-model.

S: I did, already in chapter 2. [....] I argue that the Fugle is a good generic representation of an innovation process, and its requirements.

F: I think that anyone that is going to evaluate your thesis is going to ask why the Fugle, and the reason why you chose it is quite clear. But the methodology you used – I must, out of a marketing point of view, state that it is a valid conceptual framework.

Dr Anthon Botha (A)

CEO: InnovationLab

Interviewed at InnovationLab, Innovation Hub, Pretoria

29 October 2009

[Stephan starts slideshow]

[Concerning the definition of innovation]

A: I want to make a comment concerning the requirement of invention in the innovation process . Invention to me means something original - this is not required as part of the innovation process . Sometimes the most successful innovations don't contain any new inventions. You often get innovations that carry no new IP, but then are commercial successes.

S: Okay.

[Proceeds with goal of research, Fugle description]

[Concerning Deployment Stage and then Refinement stage]

S: The goal then is to refine an innovation to the point that it can be formalized.

A: If I can just interrupt you. There is a strong commercialization principle present in this phase. If one views the classical technology development road - people try to develop a product to the best of their abilities (with reference to functionality and specifications).

You'll get it to the market much faster if you made it available in a "coarser" state. Let the customers use it, get feedback and then you'll be able to make alterations and new versions much quicker. Software is a good example.

S: Definitely.

[Author proceeds to explain Fugle stages.]

…

[Stephan proceeds to explain Open Innovation]

…

[Stephan proceeds to explain OI models]

…

[Concerning Innovation Networks, and the Pringle example.]

S: They then provide Innocentive with a solution, in return for a prize.

A: *Is that not where the problem comes in?* People get smarter, and realize the can get more from their IP than the "$5 000"? Why would you be satisfied with the prize money, when you know the product will eventually sell across the world?

S: The thing about Innocentive's model is that it happens anonymously. The members in the community never knows who the organisation is for whom they provide solutions.

A: Okay, but I made comments on this model in the document as well. I wonder how long the model will survive. Because when people become aware of the value of their knowledge, will it still work? And once again, it is an evolutionary process. It can work for now, but will it forever?

….

S: I think that these community members are okay with giving up their IP, in hopes of winning a prize. I agree, maybe it may not always be a useable service. The most important thing to realize here is that it is the responsibility of Innocentive to sustain the community. So it requires constant marketing going out.

[Author proceeds to explain Innovation network's advantages, disadvantages and criteria]

A: I can think of another disadvantage. You can gain a lot of ideas through this, but the lacking feature is the "contagious factor". While you are explaining an idea, you influence what I am thinking. If you have five people around the table, you can get a lot more….

S: And this is something you will not get from this exercise.

A: Yes, you wouldn't get that from this. It is the social aspect that is lacking. If you can alter these services to include that, it will be more valuable. You should add these services as technology solutions to assist in these problem solving exercises.

The rub-off effect results in much better ideas than would be possible on your own.

S: In various challenges, you have teams of scientists working together to solve problems. It is just not as formalized to promote socialization within the service.

Okay, so large opportunity to solve insolvable problems. But what I want to get from you today is your opinion about the realism of the models, are they useable, are the advantage / disadvantages and criteria realistic.

A: I have no problem in trying to fit these models on the Fugle process. What I am trying to do now, is to determine will these models work practically. As I mentioned to you, a disadvantage maybe the lack of real time collaboration.

Concerning solving unsolvable problems - I don't know if it is unsolvable, very few problems are unsolvable. I think we should rather focus on optimum solutions, or best solutions you can obtain via collaborative environment.

I can give a lot of comments on each of those pointers, but what we should keep in mind is that you are developing a thesis that must be a defined environment for Masters, and I think you are there.

S: Maybe the reason why I referred to the problems as insolvable is because the case study on Innocentive revealed that the most problems solved, where not solved inside the organisations, because of time or other resource restrictions.

A: Then it is not entirely insolvable. It is just not solvable with their circumstances. "Unsolvable" may be a bit too much. The word may be misleading. The increased speed of R&D - if you show that they have teams of scientists working together, that makes sense.

Concerning the incentive to contribute - I think participation is more of a motivator than incentive. Why would I give my IP to P&G, while I know they are making millions from it. I would rather want to know that I am working with P&G, and I would rather know that I get royalties for every product sold.

S: There are other online services which approach the relationship like this - it doesn't happen anonymously; where the client and solver will step into a relationship after the competition.

A: Do you know of any small organisations that specialize in solving these challenge problems?

S: No, not really.

A: What is the probability of success if your one of 170 000. Will you be able to make a living out of solving these problems?

S: I think because these challenges are so diverse - it would be really difficult to have a group of solvers that are informed in all the different fields - then you would almost have to turn into a fully fledged research firm.

A: Yes.

……

[Stephan discusses further criteria for Innovation networks]

S: Another criteria states that the problems need to be of a technical nature.

A: That eliminates a lot of the issues I had with the model - relating to the social aspect and other factors thereof. It will be difficult to solve social problems via this route. You can almost state that as a disadvantage - the limit this model has to solve technical natured problems.

S: You see, I think this model is meant to solve specific problems within a larger product design process. It is not that you aim to solve a general problem you may encounter in a social environment. It is intended for specific, detailed sub-aspect R&D problems.

A: You are referring mostly to a product environment, but services are almost a larger industry than products. There are small differences in the approach to product, technology and services innovation, but the basis of innovation remains the same. You should be concise in stating that you are mainly focussing on product innovation.

S: I did. For the main reason that your product is the most tangible interface between the organisation and the clients.

A: Okay. Could you identify certain industries where Open Innovation would be more applicable than others?

S: I think that it is more relevant to a B2C environment, rather than a B2B environment. And I've chatted to a woman from Woolworths - and she said that it would be difficult to place certain of the models within their organisation.

….

So the primary goal of innovation networks is then technical problem solving.

[Stephan continues to explain customer immersion]

A: You should clearly depict the differences between what you refer to as customer immersion, and Beta-testing. Beta-testing maybe a subset of customer immersion.

I think Beta testing has two subsets - people with technical knowledge, and people without technical knowledge… These customer immersions will most probably happen under your innovator leaders (lead users)

S: That is one of the criteria I have developed. We will get to that. You should watch out for that. These lead users are normally more tech-savvy, which is not a good representation of your intended target market.

…

[Stephan continuous to describe CI criteria]

A: How many of these criteria did you develop yourself, and how many comes from the literature study?

S: There are few that is described and written like this anywhere. It is mostly what I deducted from the case studies.

A: I just thought now… These are the criteria that is important when you consider the models individually, but what happens when you align these models one after the other in the Fugle process? Do we consider criteria for the entire process when they are lined up?

S: My intention was to develop and make these models available as an additional tool the standard process. It is in no way to intended that organisations should make use of all the models. Maybe it can happen in a specific organisation that all the models be used one after the other, but the intention is to provide an alternative.

A: You can thus go in and out. So it is more applicable to the systematic innovation process.

S: Exactly.

A: Okay.

[Stephan proceeds to explain CPD]
[Concerning T4A example]

S: And it is amazing - the community members submit the data….

A: They submit the data because they are enthusiasts?

S: Exactly.
….
S: One of the criteria that is very important for this model, and especially T4A is quality assurance.

A: When I made use of their service, I received excellent service.

S: That is why they are so successful - the community is very active. They are constantly communicating and providing feedback. And if you are a member of the community you will also receive new map-updates for free. That how they keep the community active.

…
[Stephan describes advantages, disadvantages and criteria of customer immersion]
[Stephan describes Idea Competition]

S: Two types of competitions – speculative and open-ended.

A: This is very applicable to the creative industry. Remember that Doritos ad?

S: Yes, it aired during the Super Bowl half-time show. It is definitely more applicable in the creative industry.

…
[Stephan describes Platforming]

A: This is obviously very popular in your Microsoft, IBM…Where they can then create platforms, and the guys then develop applications.

S: This model is definitely more applicable in the software industry. And since Apple launched the iPhone ecosystem, all the competitors have launched as well.

A: Not necessarily. We can chat about what I think may become important now.

[Dr Botha discusses FabLab concept as platforming example.]
…
[Stephan describes criteria of platforming] [55:00]
[Stephan describes the Fugle allocation of the OI models]

S: What I want to find out from you is, does this make sense? I know it is conceptual and theoretical, but do these models provide a basis to work from?

A: I think it is. For now, for your Masters I think it is. For a Masters you have a very narrow, deliverable goal. You took the Fugle-model, you developed the different Open Innovation models and you merged the two. You defined the concept of Open Innovation in the B2C environment, where I think it is very applicable. You looked at case studies for each of the models, to see how they will fit in.

So I think you have a well developed, well formulated piece of work - I wouldn't have a problem. I would have an objection when you say you are done with this work.

You did the validation by interviewing different people to get their insights.

So I think that what is required for a Masters thesis is all achieved here, and you will receive it.

If we were now to take this further and implement it, you should keep in mind that all these models will evolve, in certain industries faster than other. This is something we should look into.

Are you interested in continuing to a PhD?

S: No, not at this stage.

…

A: I can see certain aspects of this that will be able to take you through a PhD. You should just pay attention on how you should integrate this. What would be nice is to see these models be implemented.

…

A: Have you published this?

S: Yes, it is in the conference proceedings for the SAIIE conference.

A: The conference proceedings are official proceedings?

S: Yes, but it doesn't have as much coverage as the SAIIE journal.

A: That is my recommendation - why don't you submit it to the SAIIE journal? Then, challenge a private sector to make use of it. That can then be further work.

S: Definitely - I still need to write my Future Works section in the thesis, and it will focus mostly on implementing these models and also get a perspective on the services sector. But I don't think it is within the scope of my Masters thesis.

A: No, you don't need to go so far - you should just do enough to get the degree!

We would like to, from InnovationLab's side like to stay in contact as we are interested in this. So, please stay in contact.

…

We are moving towards a scenario where we will be able to make use of this. So I would like to contact you at that point then, wherever you may be at that point.

Further, I think I should get into contact with your supervisor.

S: Great. So you are of the opinion that there is potential for practical use and value for these models?

A: I think there are consultants that can make use of this. The question is, how do people feel about the Fugle-model. Is it one that they believe in and would use?

S: I used the Fugle-model for the specific reason that it is a generic representation of the innovation process . I think that if it is applicable to a generic process such as the Fugle, you will be able to apply it to more specific models as well.

A: It follows a value-chain approach, which is the same for innovation or product development.

…

A: I think you have done a bright piece of work, for a Masters. I wouldn't think that you would have a problem within the context. I think you understand the field well. You still need to do an oral examination, right?

S: Yes

A: I don't think there will be a problem. It is the contextual value of that what you put down, more than the uniqueness of it, that is important. I can see things that can be done for a PhD from this with regards to Web 2.0: How can I support these models from a Web 2.0 perspective.

…

I don't know what you wanted from me, but from the bit that I read and what you told me - the fitting of the models on the Fugle makes sense.

Dr Heinz Essman (H) & Dr Louis Louw (L)

Business Engineering Consultants, Indutech

Interviewed at Indutech, Stellenbosch

22 October 2009

[Stephan describes the different models, as well as their allocation]

S: And those are the models, and where they are applicable. Now I want to ask you, do you agree with the placement, do you agree with the intended advantages, disadvantages and criteria?

L: I just want to ask you quickly, outsourcing, does it fit in with Open Innovation?

S: No, I don't think so. Companies are already making use of it, and it happens more on a one-to-one basis, s opposed to Open Innovation that is less structured, wider more open.

Its organized in the sense that you ask for a specific part / process, and the supplier delivers.

H: I agree with that yes. Outsourcing is a pre-determined, predefined thing, there's no room for newness or uniqueness.

For instance, nowadays they are saying that you outsource the design of a car, the dashboard, etc. Originally the design was done by BMW, and the supplier just produces. Now, the outsourcing actually involves designing the part.

S: So in a sense....

H: That's CPD (collaborative product development)

S: Exactly. There's that example of the Boeing 787 project. Whereas with the previous Boeing projects, the full spec of the designs were given to the suppliers, and they just had to comply and deliver.

Nowadays, it happens more modular design, with the connecting interfaces being provided, and the detail design responsibility is then given to the supplier.

Boeing's role then shifts to be more of a quality assurer than a product developer.

Your supplier then has more freedom to design according to their capabilities, and instead of you telling them exactly how and what. So if that relates to outsourcing, then yes.

H: I don't think that's outsourcing, its collaborative product development. Eventually the building of the final product is outsourced.

S: Yes. Heinz, you mentioned this morning that…?

H: Customer Immersion. That's more of a technical point. And after we've gone through your presentation, I think an immersion is not necessarily with a final product, its often with a tangible prototype.

But you could, add it under Refinement and Formalization, and you could use it to close the loop to the next iteration. And I don't think you necessarily need to put it there (final stage), I think you can maybe just mention it. You could use a customer immersion kind of thing with a finalized product, to understand behaviour, even identifying new opportunities for different products.

I don't know how that would happen, but I would imagine watching people react and behave, could lead you to new ideas for your product - but I am speculating here, I don't know if it will work.

On the way you've categorized it, I agree absolutely with the way you've done it, and how you got there. You might have room to add more, but…

S: But the thing is, we will only know once this was implemented…

H: Once it gets tested, yes, but I think it is pretty clear where; obviously an idea, or an open idea competition will fit in better at the fuzzy front end.

What we have found though, what our clients have mentioned about idea competitions is that it lends itself more towards incremental innovation, rather than disruptive (radical) innovation.

People, especially internal idea competition, say for instance in Eskom, they come up with ideas that improve little bit of their day to day activities.

....

S: The thing about this is that you aren't suppose to rely solely on the Open Innovation, or idea competition model.

H: Yes.

S: It is suppose to act there as an assistance, or a supporting function.

H: So I fully agree with making use of idea competitions, the fact that our clients complained that it only brings incremental innovations - I responded that you can get ideas for radical innovation from

the ideas you get in from your idea competitions. You gain a whole lot of insight, that you wouldn't have had otherwise. So never mind the actual idea there, its what surrounding the idea that's coming in.

S: That's what the guys at Idea Bounty told me as well, the companies gain so much out of the whole, or all the ideas, that it isn't only about getting the one winning idea.

H: Exactly, and it branches out drastically from those ideas. Ideas stimulate ideas. Then Idea competitions, speculative type…I mean, I've been through your list before, and I agreed fully. I was just a bit sad that Platforming was only used at the end…

S: The thing is, it only realizes at the end, but it is something you should have planned all along the entirety of the process.

H: That's right. Could it then not overlap a bit with the refinement stage? Okay, no, you would have had to formalize to realize "this is what we've got, now you guys can contribute".

S: Yes, I think it must be formalized before you can proceed.

H: No, you are right.

L: Then it almost relates more to a customer immersion project.

H: That's right.

L: I may use the Innovation Networks in the idea generation model. If you are a network of suppliers, and to get them identify opportunities.

H: Maybe that's an expansion? Your current definition is to cover technical problems with innovation networks? Louis, are you talking about an integrated knowledge network now?

L: Yes, maybe….

S: But as we've said before, this is much more wider, less defined - its a generic framework this. We know that innovation networks are technical of nature, but if you in your organisation want to make use of it in another context, it will be your choice.

H: So what you are talking about here is interaction with a prosumer?

S: Yes.

H: So all of them, and I think that is what the scope of the work is - its dealing with the prosumers - the eventual user of the product or service. And its the consumer type of stuff - its not business to business innovation.

S: To do Open Innovation in a business to business context is going to be harder - it will fit in more with the collaborative product development, where you will aim to get your suppliers involved to collaborate. The difference is, if you are working with your customers, your goal is to get as much input as possible, whereas if you get your suppliers in (which also carries open intent), it will happen more on a one to one basis.

L: But what do you call it then, when you include your suppliers as well as your customers during the early phases to identify ideas for new products?

S: Well, then maybe it will be a combination of idea competitions and innovation networks.

L: Well, then maybe I wouldn't describe the innovation networks to have to focus on a technical detailed problem - maybe it should include less defined problem statements as well.

H: I'm just thinking for he's thesis purposes now, that definition covers it for the prosumer/consumer intended market he is aiming for, but if you are aiming for an integrated knowledge network, it maybe out of scope for this thesis, but maybe you can mention it, that there are other models that exist for…like CIRP - different universities working together, operating collaboratively. Its almost a form…but I don't think it is seen as traditional Open Innovation. I think it may be seen more as traditional collaboration, but maybe you must just mention it for areas of further research, that it exists with these types of things.

L: That's how I see an innovation network, whether you call it a knowledge network, or an innovation network.

S: The role that the community plays is of crucial importance in all of these models - they have brand preference, they want to use your products - that's why it is so important to ensure the upkeep of the community.

H: And that's whets defining your scope here. Its not an integrated innovation network - these are customers who are brand loyal, like Apple users are absolutely fanatical - even though they may have a 1/100 chance of winning, they still go and do it.

S: The other big thing is - these models are less defined - people aren't formally invited to become part of your community - it is something they have preference towards. With IKNs people are

formalized to work together.

L: Well not always, people are suppose to want to work together in an integrated knowledge network.

H: But yes, you are right, Stephan, these models are suppose to be less defined. This is almost turning into a community of practice - let's say that in the innovation network model, there can exist a community of practice for petroleum related problems. And then Innocentive can use their communities of practices for specific problems. I think, Louis, should he make consideration for another models?

L: Quickly show me the definition for Innovation networks? I agree with everything, except for the criteria relating to the requirement of a well defined technical problem.

S: But then it will agree a lot with idea competitions, doesn't it?

L: Yes, but an idea competition to me is more open - you go to a broker to host a competition. An innovation network to me is more a network where you know the people you work with well and collaborate with well.

S: Okay… yes. Do you feel these models will be implementable in a real life context?

H: I've said to you before, Stephan, I don't think I've seen this level of "formalization" in Open Innovation. But I think it is a level of understanding that very few people have had before concerning Open Innovation. We spoke to Esihia from Eskom, I think these ideas, and although we had a meeting with him once, he didn't get the full gist of it - of the value of the contribution you've made. I think they can be implemented, yes.

L: Well yes, because there are examples of companies where it is working.

H: Let's think about our clients. This is difficult, because this relates more to a physical product environment.

S: This is going to be difficult for services.

L: But the customer immersion model you will be able to use?

H: Yes, but I am saying we don't know about any success stories?

L: Maybe because they are keeping it to themselves.

S: But isn't it difficult to apply this in the services sector? Because you want to involve your customer with a service that doesn't exist yet.

L: But you can make a quick mock-up, and get them involved.

H: Louis, that Metropolitan example, did you involve the brokers in the designing of the system?

L: Not entirely, they were part of prototyping and testing.

H: Which could have been customer immersion. They built a quick prototype, and then invited the brokers to go through the process now. Experience it, and give feedback. So I think we can use Customer Immersion. If we had known about it, we could have included it. So getting them involved in the refinement.

L: For me, Open Innovation is more applicable to the Funnel, as opposed to the Bugle.

S: Yes, but then if you go and look at CPD, it is definitely more orientated towards the end, and more suited towards certain industries.

H: We are short on time…

L: I think it looks good, spot on.

S: Thanks.

Johann Groenewald (J)
CEO: Tracks4Africa
Interviewed at the Faculty of Engineering
23 October 2009

[Interview starts with Stephan explaining the goal of the research.]

S: The goal was thus to develop models to deploy within the standard innovation process . Example, you would deploy model X in phase Y...

J: Definitely - your feasibility is very important. What we typically do is, we take our new product, and we send it to our community. And then they come back and report what they like, what they don't like. What we found was that you can't ask them:

"We want to build a new house, help us". You should build the concept house, and then ask their opinion.

S: But its great that you mention that, because I think T4A makes use of more than one of these models. Considering the community provides your raw material - CPD.

...

[Stephan discusses the Fugle-model.] [05:00]

...

[Concerning the Portfolio stage]

S: I spoke to a lady from Woolworths the other day - and she mentioned that the introductory phases of the Fugle makes sense to her, but the Portfolio stage doesn't.

J: Yes, when we reach this stage (Concept feasibility), we will have a well developed product. And I see you've got a refinement stage on the other side of the Fugle, but I would like to hear how you describe your refinement stage, because we already have a well developed product at this point (concept refinement stage).

We have had occurrences where we feel that the product was well enough developed to be put on the open market immediately, knowing that it is not 100% finished yet.

S: Do you mean open market, or to the community?

J: No, the open market. You may still be busy refining the product, getting feedback, so this maybe related to the refinement

S: So in other words, you do a lot of the Fugle steps, maybe just not in this particular order?

J: Yes. That's why I am saying that most companies do go through these steps, although it may not be so defined.

S: That's true, but the other frameworks that describe the innovation process, go through more or less the same steps, and the Fugle is therefore a good representation of the innovation process steps.

[Deployment Stage]

S: ….And then end of with testing of the implemented product.

J: I can just once more re-iterate that the testing that we refer to here is done by our community for us.

….

S: And then you proceed to the formalization stage, where the product will be finalized after successive refinement iterations.

J: Okay. Our product will stay in continuous refinement though - we never go to a formalization stage.

S: Yes, but that is the thing of the software industry - you can get away with that. Its the same reason why Google Gmail was in Beta state for more than 5 years.

And then finally you get to the Exploitation stage - its all about new markets, getting more value from the products.

J: Okay. Now, if I can explain to you how our process works. We are probably at this point now (close to exploitation stage). But since the concept stage we've included our community, and they mulled and mulled, until we finally had a product that we started selling, but it still remains in the refinement stage, we change it constantly.

But it has matured to the point that we can start looking at exploitation - as example, we've just signed a contract with Navteq to sell our data on all their new products. So all the new Audi's, Land Rovers and even Nokia will include our new data.

S: That's amazing. Okay, so now we've discussed all the Fugle stages and all the relevant requirements. So next we'll discuss the concept of Open Innovation.

....

[Stephan describes Open Innovation]

....

S: Now referring to the 5 models, I think T4A makes use of at least customer immersion, collaborative product development, and it seems to me that your product is now turning into a platform.

J: Okay.

[Stephan describes innovation networks]

S: So you then reward a contributor for his effort.

J: And this will work well, because you only need to reward one person, while you get input from a 100 people.

S: Exactly. You get all that input, all the customer insight - maybe you even get an idea for a new product, or opportunity.

J: We've tried to determine what is it that makes people contribute towards the community, and what we've found out is that motivation's driver is recognition, not money.

S: I think that is even more relevant to your organisation, because all the community members are 4x4 and outdoor enthusiasts, and they want to be part of the community.

J: It all boils down to recognition. Money will not motivate someone. If the peer review doesn't give recognition, or the governing body doesn't give recognition, its crucial.

S: Interesting though that Innocentive went the financial remuneration route.

J: Yes, but don't make a mistake, they would like to receive the Noddy badge as well.

S: The thing is though, that these challenges are presented anonymously. Only afterwards are the winners announced publicly. And this makes sense, because Innocentive's core advantage is their community, and they want to protect their community. And I presume this sustainment of the community is a big task?

J: It is a constant obligation and responsibility, yes. It never stops. And we get offers for our company a lot, but then we respond by saying that "No, you can't, because you can't buy the community." Yes, you can maybe buy the data, but you can't buy the people and their commitment.

....

S: One of the big criteria for Innovation Networks is that it requires a large resource investment to

evaluate all entries to gain value and understanding from the input.

J: We've found that you can't push someone to deliver something exactly to specification. You must take it as you get it.

S: But still, you do provide specification to which the data entries must comply?

J: We call it standards, but yes. We push that quite hard. You will get people that say they don't contribute towards T4A, because we are too stringent. Some people are too afraid to contribute.

S: But it helps though?

J: No, definitely. We tell them, if you don't want to make the effort, rather leave it.

S: That's true. Okay, one of the other disadvantages is that this model should only be additional to your innovation process . There is a huge risk with relying on IN solely, because you may not receive collaboration or input.

J: Yes, you must remember that you are asking people a favour - they aren't your employees.

[Stephan discusses Customer Immersion]

J: One of the big dangers of this model is that people that do get immersed, are usually, normally technically very strong. Whereas the masses aren't, and that will present a problem.

S: Very good point, we will get to that.

[Stephan describes CI's examples]

J: The amazing thing that Google is achieving is that the exclusivity created from only inviting some people creates amazing awareness. Gmail was like this at the beginning.

[Stephan discusses CI criteria]

S: A tangible prototype fosters better participation

J: That is very true.

….

J: I'll show you a picture of an example of the effort we put onto the communities data. People have

the impression that we sell the communities' data. And that isn't the case. We take their raw data, and we use it as an input, an extensive input at that, but at the end of the day, we still need to go and develop that map.

S: And also, you have the knowledge, and go through the effort of developing a complete product. It is the same case with Spec type Idea competitions - people say companies misuse a communities effort for their own fortunes.

J: We do hear that, but it is very rare. People who are a part of our community understand the process, and how it works. You get, I would guess less than 1% of community members that complain. This is in various instances a lack of understanding of the process.

S: What is your incentive for the community?

J: There is a map that fulfils to their requirements.

S: But do they pay for it?

J: No, they get it for free. If your data is included in a specific section of a map, you will definitely get that part of the map for free. And the guys then use this to do the quality assurance with as well. And they are picky!

But the thing is, the Pareto principle definitely applies here - it is not 20 / 80%, rather 95 / 5%, where 5% represents the community, and 95% present the wider market that just buys the product (according to paid customers).

S: But it is better like that?

J: It is definitely better like that.

S: Because if you have community of 100 000 people, it will be more difficult to control.

J: If your community is small, you can make the quality standards harder and maybe lose a few members, but you will retain members that are keen and eager to contribute. The flipside then is that you want enough members to increase the reach of the maps you offer (get new data in for new roads).

Our biggest challenge is breaking into the Northern Africa market….

….

S: Okay, biggest disadvantage then is the risk of not getting any input, since you are asking people a favour.

J: Correct

S: Requires extensive resources to upkeep community

J: Jip

S: It is also important to have well developed and communicated remuneration structures, as well as for IP.

J: Correct

S: Requires extensive marketing to sustain community. This may not be the case in your company?

J: That's true, but once again, you use the power of viral marketing.

S: How does your product's price compare with that of Garmin?

J: Garmin's Southern African Map will cost you R1000+ if bought separately, and oar's is now R700 for the entire Africa. So our prices are good, and we just lifted it a bit, and we haven't seen any reduction in sales.

S: Focus then is "Incorporating more relevant contributions"

J: Correct

[Stephan then explains Idea Competitions]
[Stephan then explains Platforming]

S: Hierarchical control over the entire system is important.

J: Well, not necessarily. There is a company Esree, that does the GIS software. They offer standalone products, but then they also offer SDKs, and then you can make use of their standard products, and customize it. The thing is you pay a seat license overtime you deploy it. Which is also a unique way to get third party involvement involved.

S: So it isn't that important to control the entire hierarchy, it is more open, but they still get income for

every customization?

J: Correct

[Stephan then explains the model allocation]]

J: Okay, so you then went on to show where all the models are applicable.

S: And once again, these models are only an aid to the existing process. It is not intended to replace the existing process.

J: There is an old saying - you can outsource anything, except responsibility.

S: Hehe, okay. I don't have a list of questions - I just want to find out, does it make sense, does it correlate with T4A?

J: Absolutely. But as I told you earlier, the first time you came to talk to me about the concept, it makes 100% sense. And if you go and look at the existing examples, magazine photo competitions, letter columns - its all user generated content for free.

And in T4A's place, it makes 100% sense. It is not something that we agreed upon before hand, it just happened, and now in hind side it makes a lot of sense - it fits into one of these models.

S: But I wouldn't say that you just use one model, you deploy a mixture of models.

J: Yes

S: I wonder, and remember this was prepared as generic as possible, I wonder if organisations will make use of just one model, or a combination of models.

J: I think, either directly or indirectly, yes, you will get input from outside the organisation.

S: Do you feel that OI is more orientated towards a product interface, or do you feel that it can be deployed on a higher level?

J: If it is about the innovation of new products, then yes. But what makes us different, is that we try to get the management of the company within the community. We just try to keep all things clear and well known to everyone within the community.

But there is a fine line. If we talk on the forum (in the community) about new products, there is a lot of

excitement and a lot of feedback. But the moment there is a negative issue, people tend to collaborate less.

…

J: I think a lot of what was said here today is being uses out there in industry, maybe just on a more intuitive way.

S: So maybe not just in such a defined way.

J: Let's take another concept, you've got your R&D team within your organisation, which is a 1000 people. You can just as well start to get input from other sources within your organisation.

S: To my mind, the idea of Open Innovation is to try to get our end customer's input into the process.

J: Most definitely.

S: So, if your end customer gives you an idea it will be so much more valuable in terms of feasibility, so yes, test it at your internal employees also, but get some outside mindset ideas and solutions, cause I think companies often "suffer from groupthink"

J: That is very true, if you look at your traditional processes of software development - typically used for governmental projects, they use very rigid, well document steps. And those steps are only in place to ensure traceability. People will say this is in place to facilitate all the steps.

But if you start to use these models, where you involve your end customer, where you get them to stand next to the developer to provide input at that stage. If you can get that right, you will deliver a product that will make 100% sense to the end customer.

The thing is, it is easy to deploy this in our environment, but look at your typical governmental contract - it will be more difficult to successfully deploy this.

If you can apply this to these, more traditional processes, or contracts - that will create immense value.

S: That's true. Remember that the goal of the models, and the allocation is to be as generic as possible - to provide a guideline for organisations to use. Yes, we do base it on "forward-thinking" organisations, but the goal is to be as generic as possible.

J: Yes, I do think that it will come easier for the Apple's and BMW's of this world, where the customer's preference is much more important. This is not the case for your typical governmental project - if the customer doesn't like it, so what? It doesn't matter...

S: The other aspect to keep in mind is that these models are more fitting to a B2C environment, as opposed to a B2B environment. If you do apply this in a B2B environment, it will occur more in a one-to-one relationship.

J: Yes. I think the typical mistake that happens in B2B is that you think your client is the other business, but actually your client is the other business' clients or employees. And what happens more than often, is that the people negotiating with you, are not the clients or the employees - it normally is the CFO negotiating the deal.

S: So this typically relates to the criteria which states that you need to minimize the communication barriers between the product developer and the customer that will actually use the product.

J: Exactly. And you may get opinion that isn't actually Open Innovation. But it is Open Innovation, just on a more controlled scale.

S: Where the goal in a B2C environment is almost "success is in numbers", in a B2B environment it is more personal. Yes, it is open, but it will happen more on a one-to-one basis.

J: Yes, that makes sense. I think the principles are the same. People may just not see it.

S: Thank you very much!

J: Its a pleasure - this is very interesting.

S: Its so nice to talk to someone who knows what I am talking about - because you almost work with this on a daily basis.

J: Yes, as I've said - we may just not call it what you call it, but when you explained it to me - I recognized it from our own business, from different facets of what we do. It's actually a culture that we should create within the organisation. We are starting to expand, and we don't realize it, but we should actually explain these concepts to all our employees.

It doesn't help that the two founding members understand everything, but no-one else does. It is actually our responsibility.

If I can tell you this… I don't know what exists currently in the literature, but I can definitely see a lot of application of this in the practice. Especially software development.

S: I think this is going to be more difficult in a services environment, don't you think?

J: Services? You see, the problem is that a transaction is a transaction, and it will be difficult to imitate it. That said, I would be the first to suggest that Absa get some customer immersion in!

Liné van Lill (L)

Key Account Manager: Woolworths Foods, Rainbow Chickens

Interviewed via Skype

24 October 2009

[Interview starts with Stephan explaining Fugle process]

[Innovation Networks]

S: What I want form you is your opinion regarding the applicability of the models. Are they realistic, are the advantages and disadvantages a good representation, and does the criteria make sense?

L: Absolutely, this one [innovation networks] makes a lot of sense.

S: That is exactly what your client (Woolworths) said as well - this model will be more applicable, and useable by their suppliers (Rainbow)

L: Absolutely, I think so as well.

S: Next model then, Customer immersion. This model involves a company incorporating their customers earlier into the product development process, to get their opinion.

L: So this will be used at a later stage in the Fugle-model?

S: Yes, but we will allocate this at various points in the Fugle. We aren't at allocation yet…

…

S: So there we have all the different models, in their allocated positions on the Fugle stages. Now, what I want to ask you is, does this make sense?

L: Absolutely, it makes a lot of sense. Some models make more sense than others, especially in our industry - like Platforming [wont work], because its software based….

But the advantages, and the way in which you explained it to me, makes a lot of sense, and I can believe that it can work. Do you understand?

S: Yes, definitely. It's the same thing your customer said (Woolworths) - models like customer immersion and idea competitions, innovation networks and CPD is more suited towards your industry.

But when I interviewed the guy from Tracks4Africa yesterday, he stated that customer immersion,

CPD, and platforming. These models then are more specific for specific industries.

L: Absolutely, idea competitions will definitely work at our company, customer immersion and innovation networks. What about CPD?

S: I think you are doing it already?

L: Yes, I think we are. So then all four will work at Rainbow.

S: Yes. So maybe your innovation process isn't as well defined as the proposed model, but you agree that you will be able to make use of this?

L: Absolutely.

S: Do you feel that the advantages are realistic, and you will be able to get the benefits out of the different models?

L: I think so. What are these other Customer Immersion slides?

S: Just to depict the earlier awareness that can be created from a customer immersed product.

Do you feel the specific models will be more applicable to your company, than to your customers? Specifically innovation networks…

L: Absolutely.

S: And customer immersion will be more applicable for your own commercial products - like Farmer Brown?

L: Yes

S: While Woolworths will use customer immersion as well for their customers.

L: Yes, I agree. You see, Woolworths gives me the guidelines for new products, which they in turn may get from customer research.

Okay, is there anything else?

S: No, that will be fine. All I wanted to gain from this discussion was whether the models make sense, will you be able to make use of.

L: No, as I said before, definitely.

Truitjie van Rooyen (T)

Head of Product Development: Woolworths Foods (Poultry)

Interviewed at the Engineering Faculty

22 October 2009

S: We know now that there is the need within your six identified segmented customer markets. And we know that each of the segments wants a different product – so who comes up with the ideas for new products?

T: I do.

S: Okay, so I assume you regularly come up with a list of ideas, and you need to choose what you are going to further develop (create a prototype or develop).

T: You make that choice based on this (info from previous sales). You focus on your best sellers, and then you start to build on those best sellers. Yes, you do get input from the European markets, but these can't always be trusted for the South African Market. But you eventually put your ideas on paper, and you subject it to Pathfinder (product development process software).

....

S: Okay, Pathfinder...You submit your ideas, and then?

T: Yes, all the ideas are written on paper, and then together with cost estimates, it is subjected to an internal evaluation (gate). We also do a bit of internal research. We will sometimes make use of tasting panels (internal) to judge new products or concepts. So if management is at this point not satisfied with the product, we need to go back to the drawing board.

Otherwise it will proceed to the next phase. The next phase then involves final costings (including packaging costing) – you thus get a more finalised version of the costing at this point.

If all the variables are at this point satisfactory, we will proceed to the next phase, which consist out of determining more detailed characteristics of the concept (shelf life, supplier negotiation, etc).

There are thus certain phases or gates, that a concept must go through.

S: Which makes a lot of sense, because I would like to discuss something that correlates well with your Pathfinder system. Pathfinder is thus only the software that you use to manage the process?

T: Yes, it is the software. Everyone can access it, and it is also a tool that we collect history with.

S: Which is very important in future projects.

T: Yes, but experience counts for a lot as well... You can easily tell from an early stage which projects will be successful, and which won't be.

S: Okay, if you give me the opportunity to explain the Fugle to you – it relates a lot to the Pathfinder process. The Fugle-model is a standard innovation process, which basically go through the same activities as you do with the Pathfinder – maybe a bit more defined, but it relates.

T: Yes, it does.

[Stephan explains the Fugle process.]

S: The how is important – how do you deploy Open Innovation – it is done through the Open Innovation models. I'm not going to describe all of the models, because I don't feel that all the models are applicable to your specific industry.

The models that are however, are idea competitions, innovation networks and customer immersion.

Okay, lets start with innovation networks. Assume you have an internal R&D problem, but you don't have, or don't want to use all the resources to do the development yourself.

You approach Innocentive with your R&D problem, and then they pitch it to their community of problem solvers. You make X amount of money available as prize money, in the hopes of someone having a solution to your proposed problem.

T: You should tell our suppliers about these services. They should use it! You should tell Ncami (Rainbow Farms – supplier) to use Innocentive in their metal detection problem.

S: One of Innocentive's biggest clients include Procter & Gamble – who uses it for their consumer products.

T: No, this is great!

S: This might not be applicable to all industries or companies, but I feel that certain companies will definitely be able to benefit from innovation networks.

T: You are right, but I think that a lot of companies will be able to make use of it, because every one has unique needs. One company may need software related input, and another company may require something else. Everyone has their own needs, and their might just be someone who specialises in whatever you require a solution for.

There definitely is a market for something like this.

S: The advantages for this model then is increased speed and decreased cost of R&D.

T: Yes. So if I understand you correctly, a company like us can brief a company like this to help us in product development.

S: Yes, but we will discuss another model which relates a lot to that, but Innocentive is more orientated towards technical problem solving.

Okay, on the negative side of things, increased organisation resources are required to evaluate all the entries.

T: Okay

S: Criteria for this model then include choosing between hosting own, and making use of commercial service. Other aspect is ownership of IP.

T: Yes, that can be difficult. Can you do entire product development through them?

S: Yes, but there are other services that are more suited for this (Quirky). The primary focus of IN is therefore technical problem solving. Right, next we look at idea competitions.

You get two types of idea competitions....[explains two types of competitions]

T: I was thinking while you where talking now that, say for instance SAB comes up with a new kind of beer – they can host an idea competition to find a new packaging format. There is certainly opportunity for organisations to make use of this – help us with packaging, or come up with new marketing ideas (advertisements, etc). I think a lot of the ad-agencies can make use of their services.

S: Especially if you refer to the speculative type of competitions.

T: Yes

S: Okay, last model. Customer immersion. Its almost an adaption from focus groups. And that's why I asked you at the beginning whether you incorporate focus groups into your concept testing.

[Stephan explains Customer immersion]

T: We launch various products and we think that it will be a success, and then no-one buys it, and these are the failures.

S: Exactly, in my mind you should be asking the questions to the end-customer, the guy who will be buying the product at the end of the day.

T: It makes sense what your saying, and I have an understanding for customer research, but it happens a lot that we get customer approval, and then nobody buys the products. Even customer can't be trusted 100%. Customer's tell you what you want to hear on various occasions.

It is needed, but customer research can't be your only input. It gives an indication, but it shouldn't be all the research you are doing.

S: No, that makes sense.

Now we should allocate the models to the Fugle process.

[Stephan describes the basic allocation of the models.]

Idea Generation Phase – the most fitting model is therefore open ended idea competitions...

T: It is actually a fresh approach to generating ideas, cause in many instances we talk to ourselves.

S: Exactly, you think this is what the customer will want, but in reality it is definitely not.

[Concept Feasibility Stage – Customer Immersion]

T: Which is also great is that at this point in time you will have a good indication as to the price of the final product, which can also be a deciding factor for your customer.

[Deployment and Refinement Stage – Customer Immersion]

T: Which will also be of great value, will be to determine if a product is on the shelf, why is it selling, why is it not selling, what is wrong with it?

S: Do you do similar research at the moment?

T: We do, but at the moment it is internal. We decide internally whether we should keep a product going. It's easy if its selling, but if its not selling, we ask a lot of questions. But this is still done internally.

We are going to do a bit of focus group research for our new braai pack offerings.

S: Will this be before it launches?

T: No, only afterwards, to determine why it is selling, and why not. But it won't be in such detail, maybe this is needed.

S: Okay, so here we have all the different models, allocated to the entire process.

T: Am I right in saying that the models will be reused, in a varying form?

S: Yes, definitely, and this is only presented generically. Each company should choose which models are applicable, and which are not.

Okay, questions, if you don't mind...

T: No, its fine.

S: Will you be able to make use of certain of the models at Woolworths?

T: Yes, definitely, maybe not as many at Woolworths self, but definitely at our suppliers. Especially n our Foods division. But definitely our suppliers.

S: Great. Innocentive, do you foresee that Woolworths can become part of such a system?

T: It depends on what the membership fees are?

S: The financial membership may be a barrier to entry, but do you think you will be able to make use of such a service?

T: Our companies as a whole will definitely be able to make use of such a service.

S: I wonder whether a South African company will become part of a commercial service such as Innocentive, especially since it is basically foreign to our country.

T: I was just about to say, since it is a new concept, and our markets differ extremely from the US's. There are a lot we can learn from other countries, but I think if we have a South African company as a host for innovation networks, other local companies would be more willing to become part of it.

S: I also wonder whether we have the knowledgeable capabilities in South Africa to really make a success of such a service.

T: We may not, but the South African company will then be able to link up with overseas networks to gain input.